# Railway Age Gazette

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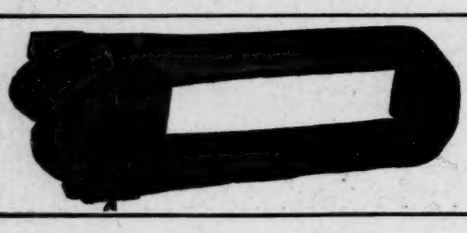

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# Railway Age Gazette

Volume 60. May 5, 1916. No. 18

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### A Significant Resolution

The South is the home of the doctrine of states' rights and the resolution which was passed by the American Hardware Manufacturers' Association at the joint conference with the Southern Hardware Jobbers recently held at Birmingham, Ala., has, therefore, special significance. The resolution urged the strengthening of the powers of the Interstate Commerce Commission in such a way as to eliminate the present conflict between state and federal railroad regulation. This joint meeting which is held annually is in the nature of a conference between manufacturers and their customers—the jobbers. There are therefore met together consignors and consignees of freight. Within both associations there must of necessity be individually conflicting interests. Jobbers in one center are competing with jobbers in another center. Improper use of state regulation might be availed of by one section to try to get an advantage over another, and such use has been made in the past of state regulation both in the Southeast and Southwest. The fact, therefore, that at a joint convention such as this a resolution favoring the substitution of federal regulation for state regulation was passed is strong evidence that a considerable part of the jobbers, if not actively in favor of such a resolution, were not strongly opposed to it. The manufacturers could hardly conceivably have passed a resolution such as this if their customers meeting with them had been strongly opposed to it. The resolution was passed on the day following the address of Charles J. Graham (*Railway Age Gazette*, April 28, page 948), president of the American Hardware Manufacturers' Association, in which he strongly deplored state commission interference with railroad rates and management. Like the statement given out by the president of the Texas Farmers' Union, this action of shippers at Birmingham is a good indication of the direction of thought of the more influential shippers.

### Politics and the Railroads

One of the most encouraging signs regarding the railway situation is the fact that instead of being regarded as bad politics it is now regarded as good politics for leaders of public opinion to say a word in favor of lenient and even generous treatment of the railway companies. Until very recently public opinion in Missouri has not been friendly to the carriers. That a change in sentiment has occurred is indicated by some remarks which E. E. E. McJimsey, editor of the Springfield (Mo.) Republican, made in his eloquent speech as temporary chairman of the Republican state convention at Excelsior Springs, a short time ago. Mr. McJimsey said that state regulation of quasi public concerns is right and necessary, but that "regulation that is carried to unreasonable, that is to say ruinous, extremes is as reprehensible as the wrongs it would eradicate or forestall." He added, "The Republican party takes the stand that the hour has come for affording all kinds of business the chance to grow big in Missouri. Springfield, as many of you know, is the hub of the great Frisco railroad system. When the Frisco is operating on a poverty basis Springfield suffers and everybody in it. So to a degree does the country round about. When the Frisco is busy and prosperous Springfield is busy and prosperous, and everybody in it. So to a degree is the country round about. What is the lesson? This: If the difference between two and two and one-half cents the passenger mile is the difference between poverty and prosperity along the Frisco or any other line of railroad in this State, the Republican party says: "Let us pay the two and one-half cents and get the prosperity." Mr. McJimsey, besides being active as a leader in politics in Missouri, is the editor of one of the principal country newspapers of the state, and no class of men knows the temper of the public better than the editors of leading country newspapers. There is no state in the Union where a larger part of the railway mileage is in the hands of the receivers and where therefore, the railways need fair treatment more, and where the unfair treatment given them in the past has hurt the people they serve more, than in Missouri.

### A Job for the Interstate Commerce Commission

The plan for an investigation by the Interstate Commerce Commission of the wage controversy between the railroads and their train service employees, as proposed by the Chamber of Commerce of the United States, seems to present the most practicable suggestion yet offered for an adjustment of the difficulty. In no other way can all of the vital interests involved receive proper consideration. Such an investigation should consider all phases of the problem, but especially the effect on the public of an enormous increase in the cost of performing the transportation service of the country, and the proper relation between the wages of the train service employees and

of the other 82 per cent of railway employees. A demand for an increase of wages of the magnitude of that proposed is not limited in its effect to the two parties to the controversy. If granted by the railways, unless offset by large increases in freight and passenger rates, it would be absolutely impossible for the roads, within any reasonable period, to do anything to improve the condition of their other employees. If, on the other hand, rates are to be increased to pay higher wages to the train employees, because they are so strongly organized that they may be able to enforce their demands by a strike, shall rates be increased enough so that a similar increase shall be paid to all railway workers? The trainmen, who are now the highest paid class of railway labor, want an advance of 25 per cent or more. A 25 per cent advance for all railway employees would cost $330,000,000 a year. If a board of arbitration is to determine whether a part or all of the demand of the trainmen is to be granted, it should also be authorized to decide whether or not the other employees are also entitled to an increase, and to say who shall pay the cost. The Interstate Commerce Commission has the power to determine, to a very large extent, what rates the railroads may charge for their services. Nearly two-thirds of their operating expenses consist of wages. If so large an element of the cost of service is to be increased it should only be done with the approval of the same body that has jurisdiction over the rates.

## TRANSCONTINENTAL FREIGHT RATES AND THE PANAMA CANAL

THE adjustment of transcontinental freight rates, which has occupied so large a share of the attention of the Interstate Commerce Commission ever since its organization is again demonstrating its possibilities as a perennial trouble-maker. The commission devoted several days last week to hearing testimony on the application of the Spokane Merchants' Association and the Nevada and Idaho railroad commissions for a new readjustment in view of the changed conditions as to water competition brought about by the temporary closing of the Panama canal and the diversion of the vessels formerly engaged in the canal traffic to other and more profitable fields of operation. Steamship officials who appeared as witnesses for the complainants testified that the vessels previously used in the canal traffic have been scattered to all parts of the world, attracted by the high ocean freight rates, and expressed the opinion that the boats would not be able to return to the coast-to-coast service within a year or two at least, even if the European war should soon come to a close.

The traffic manager of the American-Hawaiian Steamship Company testified that his steamship company had turned over to a transcontinental railroad a contract for carrying Hawaiian raw sugar from San Francisco to the Atlantic seaboard at a rate of 60 cents a hundred pounds, for which the steamship company received only 50 cents a hundred, and that it was good business for his company to lose $2 a ton in order to enable its boats to engage in the trans-Atlantic trade at high rates. On these grounds the representatives of the intermountain district argued that conditions no longer justified higher rates from the east to their territory than are charged to the Pacific coast terminals. Representatives of the railroads took the position that the commission should not make any changes in the orders previously issued to meet an abnormal and transitory condition and shippers from the Atlantic and Pacific seaboards and the middle west generally concurred.

In view of the fact that the fourth section of the Interstate Commerce act prohibits the advancing of freight rates that have been lowered to meet water competition except for some reason other than the elimination of the water competition, it is difficult to see how the commission can accept any other view. The steamship companies whose representatives appeared on behalf of the intermountain shippers would doubtless be glad to have the railroads raise their rates to the Pacific coast in the hope that they would in some way be maintained, while the railroads have had enough disturbances in their rates to be disposed to let well enough alone.

## A FEW WAYS OF INCREASING WAGES

SOME men achieve promotion; some have seniority thrust upon them; and others join the union and demand an "eight-hour basic day." The ordinary way of obtaining an increase in pay is to work hard, make a hit with the boss and get promoted to a better job. This is what is known as "recommended practice."

The brotherhoods of railway train service employees now demanding a "raise" of $100,000,000 a year have this method open to them, but they are more resourceful than those who depend on the usual methods. The brakeman may be promoted from the extra list to a regular run, from a freight train to a passenger train, from one class of train service to a higher class, and from brakeman to conductor. The conductor is promoted from one class of train service to another, and then possibly to an official position. The fireman is promoted from freight to passenger service and from fireman to engineer, etc. If he is willing to accept a temporary decrease in pay he may also be promoted to an official position. From such beginnings many men have become railroad presidents. A few possessed of the right kind of ability have even risen to the office of chief executive of a brotherhood. But without progressing beyond the rank of engineer it is possible to earn as high as $4,000 a year.

Another way of getting more money frequently practiced by train service employees is to demand an increase for all and threaten to strike if it is not forthcoming. This method has been successful on many occasions in the past and has the advantage of making it unnecessary to get along with the boss. He has nothing to do with the affair except to provide the wherewithal. If the strike threat is not taken seriously it is possible to submit to arbitration the question of whether the employees shall get all or only a part of what they ask. In this way a demand for a 25 per cent increase has been made to net 10 per cent. This procedure has of recent years proved the most productive.

Another variation is to get the management to make an allowance for certain "incidental" work and then to submit to arbitration the question whether or not the railroads shall be required to hire another man to do the "incidental" work. With a "saving clause" in the arbitration agreement, this course has been known to give results.

A classification of wage schedules based on the weights of locomotives has sometimes increased the pay of the engineer and fireman. The equipment of a locomotive with a superheater makes the work easier, but it adds to the weight of a locomotive and thus to the size of the pay check.

After having secured the adoption of a rule making a run of 100 miles the equivalent of 10 hours' work, or at least of 10 hours' pay, a hint to the labor leader in the state legislature that long freight trains cause congestion of street traffic at the busy crossings in Backhomeville, is often sufficient to cause the introduction of a bill to limit trains to 50 cars. With 50 cars in a train 100 miles can be run, and one day's pay recorded in the time books, in less time than with 75 cars. This method, however, has thus far been attended with but indifferent success.

Probably the most effective means for increasing the payroll yet devised by labor leaders is to do 10 hours' work in eight hours for 10 hours' pay, and then to do two hours' overtime work for three hours' pay. This method would increase wages 37½ per cent. Whether it will prove as practical as it seems theoretically attractive will depend to some

extent on whether the circulating medium can be made to increase its speed basis by 37½ per cent. Otherwise the only objection to the plan will come from those who failed to think of it first.

## FREIGHT CAR MAINTENANCE COSTS

THE constantly increasing cost of freight car maintenance has been looked upon by some students of railway affairs with much concern, and it must be granted that when the increase is considered without analysis it does seem startling. But when the conditions prevailing on the railroads, and the related statistics are carefully studied the cost figures are shown to be not nearly as bad as they at first appear.

Below is given a table presenting for the seven years, 1908 to 1914, inclusive, figures concerning the cost of repairs to freight cars taken from the annual reports of the Interstate Commerce Commission. There are no comparable statistics for earlier years because of changes in the classification of the accounts. This table shows that in 1908 the average cost of repairs to freight cars was $59.30 per car, and in 1914, $80.30, an increase of 35.4 per cent. The table also shows that the ton-miles hauled per $1 spent for freight car repairs gradually increased from 1,762 in 1908 to 1,802 in 1913. There was a sharp decrease in 1914, owing to the exceptionally heavy decline in business handled that year. There is a tendency, however, under normal conditions, for the amount of traffic handled to increase faster than freight

REPAIR COSTS AND SERVICE DATA FOR FREIGHT CARS.

| Year | Number of freight cars | Cost of repairs per car | Ton-miles per $1 repair cost | 1,000 ton-miles per freight car | Average daily wage: Machinists | Carpenters | Other shopmen |
|---|---|---|---|---|---|---|---|
| 1908... | 2,089,302 | $59.30 | 1,762 | 104.5 | $2.95 | $2.40 | $2.12 |
| 1909... | 2,073,606 | 59.70 | 1,768 | 105.5 | 2.98 | 2.43 | 2.13 |
| 1910... | 2,135,121 | 65.60 | 1,821 | 119.5 | 3.08 | 2.51 | 2.18 |
| 1911†.. | 2,117,644 | 65.10 | 1,815 | 117.9 | 3.14 | 2.54 | 2.24 |
| 1912†.. | 2,140,687 | 65.50 | 1,858 | 121.5 | 3.21 | 2.55 | 2.24 |
| 1913†.. | 2,209,533 | 74.70 | 1,802 | 134.6 | 3.26 | 2.63 | 2.31 |
| 1914†.. | 2,263,015 | 80.30 | 1,565 | 125.8 | 3.27 | 2.66 | 2.36 |
| Inc.*.. | 8.33 | 35.4 | 2.27‡ | 28.8‡ | 10.9 | 10.8 | 11.3 |

*Percentage.
†Figures taken for roads having operating expenses above $1,000,000.
‡The year 1914 was not considered as it was exceptionally low in traffic.

car repair costs, which indicates that in spite of the increase in the cost of repairs, the cost per service rendered is being reduced. The increase in the service rendered per car is clearly brought out in the column showing the number of tons carried one mile per freight car per year. Between the years 1908 and 1913 this increased 28.8 per cent.

In analyzing the changes in the cost of repairs during this period the following six important items must be considered. Labor, material, old wooden equipment in long trains, shop facilities for handling steel car repairs, increased service rendered by the cars, and increase in the size of cars. That the first item, labor, has grown more expensive is shown by the table, which gives the average daily wage for machinists, carpenters and other shopmen. This item has increased approximately 11 per cent. While as yet definite information has not been obtained regarding material costs it has been ascertained that the price of lumber used in freight car repairs has increased during this time. The other four items have had, however, the greatest effect in increasing the repair costs. It is a well-known fact that owing to the longer trains that have been made possible by larger and more efficient locomotives, and other improvements in facilities, the wooden equipment has been subjected to much more severe treatment during the past few years. While the larger roads have been getting this type of equipment out of service, many of the smaller roads have not been able to do so, and during this transition period extraordinary repairs to this equipment are to be expected. As the wooden cars are replaced with all-steel and steel underframe cars (cars of these types now represent over 50 per cent of the equipment in service) the expense resulting from extraordinary repairs to wooden cars will gradually decrease.

The constantly growing number of all-steel cars, 50 per cent of which have come into service during the past five years, has created a demand for a large increase in the shop facilities for maintaining this class of equipment. It is safe to say that not until five years ago, or possibly three years ago, was the lack of proper facilities for this purpose seriously felt, but it has now become so important on many roads that the cost of repairs is larger than it should be. As some mechanical officers have remarked: "We are taking the work as it comes and working out our salvation as best we can," and a visit to their plants indicates that the conditions under which they are working are not conducive to economy. As the railways become more familiar with this work and better facilities are provided, it is reasonable to expect that there will be a considerable saving in this item.

The increase in the service rendered per freight car, as indicated by the statistics, obviously tends to cause an increase in repair costs per car. The fact that the equipment has been more efficiently used is creditable to the railway managements, and, as mentioned above, the tonnage hauled per unit cost of repairs has shown a general increase. The larger cars also have the effect of increasing the repair cost per car. During the period under consideration the average capacity of freight cars has increased 11.4 per cent, and the following table shows in some detail just where the increases have been:

| Capacity | 1908 | 1914 | Percentage, increase over 1908 |
|---|---|---|---|
| 25 tons and under | 341,012 | 126,950 | *62.8 |
| 30 tons to 45 tons (inclusive) | 1,391,975 | 1,499,538 | 7.6 |
| 50 tons to 75 tons (inclusive) | 363,045 | 697,975 | 92.2 |
| Above 75 tons | 202 | 764 | 278.0 |
| Average capacity (tons) | 35 | 39 | 11.4 |

*Decrease.

There has been a marked decrease in the number of cars having a capacity of 25 tons and under, and since it has been voted by the Master Car Builders' Association to eliminate from interchange service after October 1, 1916, cars of these capacities which have metal draft arms which do not extend beyond the body bolster, the number of these cars will still further decrease and a large source of repair expense will be removed.

In considering the entire subject of freight car maintenance in a fair-minded analytical way, it appears that a material increase in the cost has been warranted, and as the weaker cars are eliminated from service and the steel car is more efficiently maintained, the cost of repairs per car probably will show a much more satisfactory relation to the service performed per car. This does not mean, necessarily, that the cost of repairs per car will be less than at present, although there may be a slight decrease.

## PITTSBURGH & LAKE ERIE

THE next to the last paragraph in the letter of transmittal of Vice-President Schoonmaker in the annual report of the Pittsburgh & Lake Erie gives a key to the showing made by the road in 1915. Mr. Schoonmaker says: "At the beginning of the year drastic economies were introduced in the operation of the road because of the business depression of the previous year. Traffic during the first four months fell off to such an extent that each month's results were viewed with apprehension. . . . With the beginning of October traffic of almost every description began to move in great volumes, offsetting by far the losses in revenues of the previous periods and taxing the company's supply of available equipment to handle same."

The operating ratio of the Pittsburgh & Lake Erie in the calendar year 1915 was reduced to below 50 per cent, com-

paring with an operating ratio of over 66 per cent in 1914. The amount spent for repairs of freight cars was reduced to less than $50 per car, total maintenance of equipment expenses being 20 per cent less than in 1914 and total maintenance of way expenses being 22 per cent less than in the year 1914.

Apparently what took place was something like the following: When the budget for maintenance was made out in December, 1914, every item was scrutinized with the utmost care and a program was laid out which necessitated the strictest economies. This program was adhered to for more than four months. Business then began to pick up, but the retrenchments in maintenance expenses were continued for fear business had gotten a false start; then suddenly in October came a volume of business wholly unprecedented. It was too late to make maintenance of way expenditures, and the equipment was so badly needed in service that only disability of a freight car to do its work was justification for sending it to the shops. Thus the reduction in operating ratio was in considerable part due to a peculiar combination of circumstances.

On the other hand, a very good showing indeed was made in transportation expenses. Total operating revenues in 1915 amounted to $18,196,000, or $2,599,000 more than in 1914. Almost the entire gain in revenues was in freight, and the total ton mileage of revenue freight handled was 2,017,000,000, an increase of 273,500,000. This increase in ton mileage was handled with 5,000 less freight-train miles, the total in 1915 being 1,558,000. The average revenue trainload in 1915 was 1,295 tons, an increase of 179 tons. Is it any wonder that the Pittsburgh & Lake Erie is familiarly called "The Little Giant"?

The Pittsburgh & Lake Erie operates only 225 miles of road. Its freight density, however, in 1915 was 8,983,000 (tons one mile per mile of road). The average revenue per ton per mile in 1915 was 7.77 mills, an increase of 0.15 mills, making the freight revenue per mile of road $69,783 and total revenue, including passenger, $81,030. In other words, the Pittsburgh & Lake Erie's revenue per mile is greater each year than would be the cost of building a double-track railroad through ordinary middle western country. Freight-train mileage in 1915 was, as previously mentioned, 1,558,000, while yard switching locomotive mileage was 2,724,000. The operation of a road such as this, which is analogous in many ways to the operation of a very vast yard, requires quite unusual precision and uniformity. This is gained by the Pittsburgh & Lake Erie through a form of organization in which final authority is concentrated to an unusual degree in the hands of one man—the vice-president. A total mileage of 225 miles seems a small amount to be under the direction of an executive performing the duties and with the responsibilities of president; but it is not length of road but density of traffic which makes the Pittsburgh & Lake Erie one of the important railroads of the country.

In addition to the great freight density the road has a large passenger business. The total number of passengers carried in 1915 was 4,241,000, a decrease as compared with the previous year of 342,000, and the passenger density (passengers carried one mile per mile of road) was 501,000 in 1915. The average receipts per passenger per mile were 1.878 cents in 1915, an increase of 0.02 cent over the previous year. Passenger revenue alone, therefore, amounts to more than $10,000 a mile, a figure that would be large for total operating revenues on many thousands of miles of western railroad.

In 1915 the Pittsburgh & Lake Erie spent $690,000 for additions and betterments, most of which was accounted for by additions to yards and sidings, and by the expenditures on a storage warehouse in Pittsburgh west of the West Carson street freight houses. Except for comparatively small amounts spent for betterment to freight cars and locomotives and for building caboose cars in the company's own shops, there were no expenditures for new equipment during the year, and 4 locomotives, 3 passenger-train cars and 326 freight cars were retired. The Pittsburgh & Lake Erie now has contracted for 5 Mikados, 2 Mallets for switching service and 2,000 composite gondola cars, and also for 5 Mikados, 1,000 composite gondola cars and 1,000 steel hopper cars on account of the Pittsburgh, McKeesport & Youghiogheny. No securities were sold during the year and the outstanding funded debt was decreased by $531,000 through the payment of equipment trust certificates. The Pittsburgh & Lake Erie's funded debt is at the rate of only a little over $100,000 per mile of road owned (72 miles).

The following table shows the principal figures for operation in 1915 as compared with 1914:

| | 1915 | 1914 |
|---|---|---|
| Mileage operated | 225 | 224 |
| Freight revenue | $15,670,452 | $13,281,299 |
| Passenger revenue | 1,600,263 | 1,686,389 |
| Total operating revenues | 18,196,068 | 15,597,365 |
| Maint. of way and structures | 1,496,267 | 1,911,610 |
| Maintenance of equipment | 2,923,100 | 3,658,193 |
| Traffic expenses | 168,170 | 173,477 |
| Transportation expenses | 4,022,494 | 4,221,964 |
| Miscellaneous expenses | 39,574 | 43,495 |
| General expenses | 334,712 | 342,465 |
| Total operating revenues | 8,984,316 | 10,351,204 |
| Taxes | 593,922 | 631,596 |
| Operating income | 8,617,787 | 4,614,440 |
| Gross income | 9,651,475 | 5,658,595 |
| Net income* | 7,568,779 | 4,083,419 |
| Dividends | 2,998,800 | 2,998,800 |
| Surplus | 4,569,979 | 1,084,619 |

*The much larger deduction from gross income in 1915 than in 1914 is accounted for by the fact that so large a part of the Pittsburgh & Lake Erie's mileage is operated under some form of lease, and in some cases the amounts payable under the lease are proportionate to gross income.

## NEW BOOKS

*Information for Employees and the Public.* Published by the Pennsylvania Railroad.

In this book the Pennsylvania Railroad, following the practice established a year ago, has bound together the series of leaflets issued by the road frequently throughout the year in the interest of improved service, increased efficiency and a better understanding by employees and the public of railroad problems. In these leaflets, which are given a wide distribution among the employees and among newspapers, are printed interesting articles regarding the work of the railroad, photographs and biographical sketches of men who are promoted in the service, addresses by officers, reprints of newspaper articles and editorials about railroad work, articles describing some specially meritorious service by employees, etc. These are arranged chronologically in the book with a comprehensive index and table of contents.

*Federal Employers' Liability Act.* By John A. Walgren of the Chicago Bar. 146 pages, 5½ in. by 9 in. Bound in buckram. Published by T. H. Flood & Co., 214 West Madison street, Chicago. Price $2.

This publication presents in selected literal excerpts from the decisions of the highest federal and state courts the present status of the law in force under the federal employers' liability act, the federal safety appliance act and the hours of service act in reference to construction, interpretation and enforcement, and is compiled for use as a practitioner's manual. The essential extracts, together with the annotations of cases involving questions arising under these statutes, are compiled and arranged in concise form with brief references to citations on minor points, so that the practitioner may, by glancing through the pages, readily obtain a comprehensive and accurate conception of the salient features of the law as interpreted by the courts. The work also contains forms of pleadings, which set forth approved methods of invoking the statutes.

# Letters to the Editor

## THE REVISED STANDARD CODE

TOPEKA, Kansas.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The three articles on the new standard code, by C. C. Anthony, recently published in the *Railway Age Gazette*, while necessarily critical, are constructive in that they point out a way by which the A. R. A. indications can be changed so as to provide a working set of instructions that will mean what they say and leave nothing to the discretion of the engineman. The articles are so complete that there is very little to say except to show appreciation for the thorough way in which the various arguments are presented.

One rather interesting thing, however, is that if we are obliged, of our own volition or by order of federal or state officials, to adopt automatic train control, the very things which Mr. Anthony and other earnest thinkers advocate will be compulsory. No machine that can be designed will take care of the complex set of instructions now in use in many instances or as contemplated in the new code.

The best we may hope to obtain will be stop, caution and proceed, and this will mean that the train will be compelled to slow down at the caution signal and stay slowed down till the next signal is passed even if it is indicating proceed.

Why not try this before we are compelled to adopt automatic control?

THOMAS S. STEVENS,
Signal Engineer, Atchison, Topeka & Santa Fe.

## THE IMPORTANCE OF THE DISTANT SIGNAL

OTTUMWA, Iowa.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Three very significant things have recently been published in the *Railway Age Gazette:* First, a record of the action of the American Railway Association in adopting the revised standard code (November 19, 1915); second, the articles by C. C. Anthony relative to the signaling rules in the revised standard code (March 17, April 7, and April 14, 1916); and, third, the reports of passenger train accidents occurring recently (March 17, April 7, and April 14).

With reference to the signaling rules in the revised standard code, I find it almost impossible to grasp the significance of the fine-haired, detailed distinctions brought out in these rules, although I was in railroad service for approximately fifteen years, about half of this time being spent in the signal department and four or five years of it in charge of the signal department of the Chicago, Milwaukee & St. Paul. If they are beyond the comprehension of a man who has made a study of signaling for at least ten or twelve years, how can railway officers expect the engineers and trainmen to interpret the rules and signal aspects as they are intended?

In my opinion the minute distinctions that are made in the various classes of caution are wholly theoretical, entirely impracticable, and will be useless on any railroad in the country. By this, I mean that in actual practice the engineers or trainmen will group all of the varieties of caution indications into a single class, calling them "caution," and be governed accordingly. Mr. Anthony has brought out a number of the differences between the old code and the new very clearly. His article in the issue of April 14 should be read with extreme care by every railway officer in the United States. He has covered the ground very well, but in my opinion he has not sufficiently condemned the practice of trying to maintain a lot of fine-haired, theoretical and impracticable caution distinctions. He has not brought out in sufficiently strong language the pernicious effect of teaching or permitting an engineer to pass caution signals at unlimited speed with the intention of doing something else at some point in advance at his own discretion.

In my opinion, all such signal indications as "prepare to do this," "prepare to do that," "look out for this," or "look out for that," "approach a certain signal in a certain way," are all "tommy rot," and the distinction exists only in the mind of the man who is drawing up the rule. If the engineer is an intelligent man, he will lump them all together as "caution" signals, and he should do this. Then he can run safely, and only then. My experience as a division superintendent for several years convinces me that it is entirely impracticable to maintain discipline or to call employees to a strict account for the proper obedience of any such collection of theoretical caution signals as have been outlined in the revised standard code. On the contrary it is very easy to maintain discipline when using a simple signal scheme with indications such as "stop," "caution," and "proceed," which years of experience have indicated are entirely sufficient.

There have been a number of rather serious accidents to passenger trains during the past few months, and it must be a matter of concern to railway officers that a real substantial reason for these accidents has not been offered. There is a real reason for such accidents, however, and if the cause is not removed it may be expected that there will be more of them from time to time. Railway officers certainly cannot maintain that it is safe railroading to run high-speed trains at an interval of a mile or two and at the same time teach engineers on these trains that they may disregard a caution signal provided they take some action at some point in advance at their own discretion, or teach these men that a caution signal is not really a caution signal, but is an indicator which shows the position of a signal in advance; and that they can infer thereby that the signal in advance will be in the position indicated when their train reaches it.

Any kind of signaling or rules which encourages the disregard of a caution signal in favor of a discretionary future action which is frequently never taken, is found to be provocative of accidents when the proper combination of conditions occurs. There is only one way of running trains safely, and that is to maintain a space interval. This can only be done by enforcing obedience to caution signals *immediately*, in the same way that obedience is required of a stop signal. Railway men do not think of enforcing obedience to stop signals at some point in advance at the discretion of the engineer, nor do they have a dozen minute distinctions in the kind of a stop that an engineer must make to comply with a signal. There is no more reason for having a dozen different kinds of caution signals. Further, it is absolutely impossible to secure safety by running beyond a caution point *for the purpose of speeding up trains or closing up space intervals which are already too short for trains running at high speed.* Just as long as this pernicious practice is continued, railway men may expect to have collisions, and there will be the same lack of proper explanation as there has been in the past few months.

On page 834, of your issue of April 14, is found a statement by the chief engineer of the Connecticut Railway Commission that could well be committed to memory by every railway officer in this country. He recommends "a rule requiring all trains to be brought under control before passing block signals indicating caution, and to be maintained in that condition until the next block signal indication in advance is seen and obeyed." It seems to me entirely unnecessary for the railroads to bring about forcible application of

automatic stops on their lines through the pressure of public opinion; and by the same token, it should be entirely unnecessary for state commissioners to point out to railway officers the proper remedy for unsafe conditions.

L. R. CLAUSEN.

## THE FUNCTION OF THE DISTANT SIGNAL

COFFEYVILLE, Kan.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The editorial on the "Function of the Distant Signal" appearing in your issue of April 21, unlike many previous opinions expressed by you, does not show that clear grasp of the subject your readers have been trained to expect. Instead of a fair analysis of the facts with logical conclusions, we are left with a hazy impression of differences in signal aspects and practices to be settled and a desire that the right shall prevail. All honor to such good purpose, but as an aid to advancement it seems desirable that something more be said, and from a practical rather than a theoretical and academic standpoint.

It may be well enough to word a rule requiring the engineman to run his train a certain way and thus make it possible for a superintendent to blame the engineman when getting into trouble, but unless the engineman may exactly obey the rule under the operating conditions that exist, the rule becomes merely a requirement that the engineman act in the manner regarded through usage as satisfactory and proper. To one interested in the subject it would seem that those who advocate the use in the rules of the words "caution" and "control" think that these terms sufficiently indicate and describe practically all the actions to be taken by the engineman except those of "Proceed" and "Stop," although of course the engineman must instinctively make the distinctions necessary for the safe movement of the train according to the existing local conditions. If these distinctions are made by the engineman—and one familiar with the running of an engine will know that they must be made—it is to the practical operating man better that the action to be taken by the engineman be clearly prescribed by the indication rather than to leave these distinctions to the intuition of different enginemen.

While it may seem somewhat strange to question the correctness of the recommendations made in the report on the Milford collision that a "train should immediately slow down upon receiving the first caution signal and be governed in like manner thereafter by each succeeding caution signal," it may properly be assumed, from statements made by Mr. Belnap after the Millford report was issued, the rule desired was one that will require enginemen to run their trains at such speed that clear signals will be received and an approach or caution signal shall not be successively passed at normal speed; that the practice complained of is not that where an occasional approach signal is passed the indication is disregarded but that a train following another train and passing approach signals successively on the assumption the train ahead will not reduce its speed and the next signal when reached will be giving an approach indication, the engineman is not running safely and is clearly disregarding the plain requirement of the Code rule and should be made to give up such practice.

It is not shown by the Milford accident or by others that have recently been investigated, that the indications of the Standard Code are incorrect or should be changed. The recommendations of the Milford report are to the effect that an additional rule be prescribed, but not that the Standard Code should be changed.

The views of Mr. Anthony as expressed in his series of articles appearing in the *Railway Age Gazette* and those of the officers of the Atchison, Topeka & Santa Fe and the Missouri Pacific roads, as expressed at the Chicago meeting, are to the effect that the indications of the Standard Code are undesirable and either incorrect or not the best to be had; that it is not necessary or advisable to make the several distinctions in the wording of the indications of the Standard Code, but that "Stop," "Proceed with Caution," "Proceed," "Proceed at Medium Speed" and "Proceed at Slow Speed" are sufficient for any operating condition and are all that are required.

The term "Proceed with Caution" is the sole requirement recommended by the minority to define the action to be taken or speed to be run by the engineman when being governed by either one of the following indications of the Standard Code: Approach Next Signal Prepared to Stop. (Approach-signal, Block unoccupied.) Approach Home Signal with Caution. (Caution-signal, Block may be occupied.) Proceed at Slow Speed Prepared to Stop Short of Train or Obstruction. (Permissive-signal, Block is occupied.)

There is no requirement in the wording recommended by the minority as to the speed to be observed by the engineman when acting on the indication "Proceed with Caution" and it must be assumed that this is left entirely to the engineman. It surely does not specify in the sense recommended by Mr. Belnap "it is imperative that a train should immediately slow down upon receiving the first caution signal and be governed in like manner thereafter by each succeeding caution signal."

The recommendation of Mr. Belnap with regard to the desirability of an additional rule requiring the engineman to so run his train that clear signals will be received and that signals giving an approach indication will not be passed successively applies equally to the scheme of signaling recommended by the minority, and if this fact is held "clearly in mind" it will be evident Mr. Benlap's recommendations concerning distant signal practices do not "coincide with the views" of Mr. Anthony and the engineers of the Santa Fe and the Missouri Pacific.

There is no objection from an operating standpoint to a rule such as that recommended by Mr. Belnap, a similar rule having been put into effect on one road in 1904 and having also been recommended for adoption in a recent instance. The cause of the accident at Milford was due to the failure of the engineman to observe and be governed by the indications of two block signals, the first an approach signal and the second a stop signal. As the stop signal was disregarded equally with the approach signal the conclusion is forced upon us that the putting into effect of a rule such as advocated by Mr. Belnap and the particular indication displayed by the first signal whose indication was disregarded, would have had practically no effect as a preventive against the Milford accident, and therefore Mr. Belnap's recommendation with reference to an additional rule is based on other conditions than those that existed in this instance.

Railroad officers know the situation and are clearly facing the question of the automatic stop. The safety of the traveling public demands that railroads shall not, because enginemen disregard stop signals, blindly rush in and install automatic stops and thereby jump out of the frying pan into the fire. They, as well as many inventors, and also the Government, have spent altogether several hundreds of thousands of dollars trying to perfect a safe and reliable automatic train control device; and the railroads, as well as Mr. Belnap, are "from Missouri" and are anxiously desirous of being shown a safe and reliable automatic train control device that will not make operating conditions more dangerous than they are at present. The present development of the art is undoubtedly such that the extension of the automatic block system is more greatly to be desired as a matter of safety than the installation of a train control device.

A STANDARD CODE MAN.

## LOYALTY

ROCHESTER, N. Y.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Much has been said and written concerning loyalty. Many a man has been praised for loyal and efficient service, a mention of whose record would seem to prove that the only claim which might be made to loyalty lay in the fact that he had served one company for many years. But is this in itself an indication of loyalty? The mere fact that a man has served one company for many years is only an indication that he was either well paid and therefore satisfied with his job, or unable to better himself. Efficiency would seem to have been necessary if he desired to hold his job. Loyalty as I understand it is shown in sticking by the individual or corporation which gives one employment, provides bread and butter, and shoes for the children and the holding of one's employers' best interests ever at heart.

Under the present conditions obtaining in the ranks of railroads, it would seem that loyalty is found only among that class of employees who do not belong to organizations, for a man who does not belong to a union must stand on his own feet and look for advancement and additional compensation only by reason of his own individual efficiency. In these ranks we have the so-called "salaried man," and station agents, clerks and section foremen. Among these men we find true loyalty; not only do they follow up their daily tasks as prescribed, but even go beyond this, performing those duties which seem to be necessary even though not absolutely within the bounds of their prescribed labor. These men "live" with their jobs, carry home with them the responsibility of the office, plan and study that their work may be made better. On the other hand we have the members of the brotherhoods. Their duties are defined in agreements with the company, and beyond them, they feel no responsibility. At the end of his run, the engineer, conductor, fireman or brakeman discards his uniform and forgets his work completely until time for the next day's duties. Advancement for him requires only that he obey orders and rules as laid down by the company and keep out of trouble. With increased age in the service he obtains new "rights," the matter of increased wages is left entirely to the brotherhood to which he belongs. A certain amount of efficiency is needful in order that he hold his job, but because he demonstrates sufficient ability to perform his duties to the entire satisfaction of his employers and thereby retain his position for many years, constitutes no proof of his loyalty, for when a question arises which involves the difference of opinion between the company which he serves, and the brotherhood to which he belongs, instances are few and far between in which the employee demonstrates his loyalty by sticking with the company rather than follow the dictates of the labor leaders at the head of his organization. An instance of this kind presents in fact, the only condition under which such an employee can demonstrate his loyalty to the company.

At the present writing, 400,000 railway men, members of four great brotherhoods are voting to decide whether or not they will make certain demands on the railroads for increased wages. These demands, coming from a class of employees who already are better paid than 80 per cent of employees in the companies' ranks, are manifestly unfair, and would, if put into effect, work a great hardship on the different railroads. I have traveled over the lines of several large railroads recently, and have taken occasion to broach this subject with many members of brotherhoods, some I have found reticent, others rabidly in favor of the proposed increase, a few, whose conversation would seem to indicate that they felt just a wee bit sheepish because of the unfairness of the proposition, but in every case, they hid behind the expression that the matter was in the hands of the brotherhood leaders.

It is generally conceded that the vote to make the proposed demands will be carried, and that, at a not far distant date, the brotherhoods will lay before every company in this country, a demand for increased wages. Within the ranks of these organizations there are some, perhaps many men, who know that their demands are manifestly unfair; that in making them they are working against the best interests of their company, yet where is one who dares speak out and say that he believes this to be the case? His own individuality is submerged in the ranks of his organization, paid leaders who live on the efforts of other men's labor, unproducers, parasites, if you will, are handling the matter and doing his thinking for him. At such a time some one man with the ability to think these matters out to a conclusion, the necessary backbone and manhood to stand up and assert his opinion, might prove that this much-vaunted characteristic called loyalty does exist within their ranks. Such a man would become famous over night, for he would be persecuted, and expelled from the ranks of the organization. Such a movement might be made at the risk of his own life, for the lawless are everywhere and greed is the greatest incentive to lawlessness. A wonderful opportunity is awaiting some man who has the courage of his convictions, yet out of the ranks of 400,000, will there be one? I venture the opinion that there will not, for with them there can be no loyalty without courage, and courage they have not. Once again we have a demonstration of the old bible saying, "No man can serve two masters."

ALBERT MOORE.

## DRAWBACKS INCIDENT TO TELEPHONE DESPATCHING

REDSTACK, Ark.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Since the advent of the telephone into the train despatching field I have read many articles bearing upon its usefulness. These comments have been unanimously favorable, citing all of the advantages and none of the disadvantages of the telephone, and to a disinterested reader it would appear that the supreme goal of human effort—perfection—had in this instance been attained. I have waited patiently for a presentation of the other side of the question, but without result; and now, on the strength of twenty years' experience as a train despatcher, by all the different methods, I wish to bring in a short minority report myself.

One of the chief advantages claimed for the telephone is the fact that it permits first hand communication between a conductor or engineer and the despatcher. It cannot be disputed that in some cases this is a great benefit; but it sometimes proves to be a nuisance, also. A conductor or an engineer is not trained in transmitting information as is the average telegraph operator, and frequently will take up ten or fifteen minutes of valuable time explaining a situation orally on the telephone, when if the same information were given to an operator he could condense it and transmit its essentials to the despatcher by telegraph in one-third the time. I have learned this fact by actual experience.

Another of the arguments in favor of the telephone is the dearth of competent telegraph operators. It is a fact that despite the large salaries which operators receive, good ones are not very plentiful; and the telephone system has greatly relieved the situation. I sometimes wonder, however, if it really is a permanently wise policy to trust the handling of train orders to boys (as is done in a great many cases) who have not the ambition nor the brains to learn telegraphy.

The greatest advantage of the telephone is speed; but this should not be the determining factor in all cases, as on some districts a gain in speed results in considerable inconvenience in other directions. For instance, on a district where the despatching is not particularly heavy and, in addition to moving trains, the despatcher is required to keep an eye on ter-

minal work, necessitating communication on perhaps two or three local phones, to make division headquarters reports, and to attend to other little odd jobs too numerous to mention, the telephone is an unqualified nuisance. Despatchers who have had experience of this kind can testify very feelingly to the truth of what I am saying. To save time on the train wire, only to have this time filled up with new and annoying duties outside his normal field of activity, is anything but a pleasing result to the despatcher. There are still some railroads, moreover, where it is not difficult to organize a corps of efficient telegraph operators, and on some of their districts the traffic is not heavy enough to demand faster work than can be done by telegraph. In such cases the advantage gained by installing telephones will not offset the expense.

On districts where the traffic is dense and the despatcher has nothing to do but attend to the movement of trains, the telephone is a distinct blessing and should be installed by all means. On districts not in this class (and there are a great many that are not) railroad managers should ponder long and tearfully before installing telephones. If all the facts are taken into consideration in such cases we shall have the telegraph system of despatching trains with us for many years to come.

HOMER PIGEON.

## OPERATION OF THE SOUTHERN PACIFIC

SAN FRANCISCO.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have noted the article in the *Railway Age Gazette* of March 31, page 738, by H. W. Forman, referring to observations made of Southern Pacific train and station operation.

The Southern Pacific Company is working under standard rules and maintains a corps of instructors who travel over the line continually, instructing trainmen on the correct observance of train rules. Between Oakland Pier and Richmond the line traverses a densely populated industrial section, where at certain times of the day many trespassers use the right of way, and for this reason the engineer might have sounded blasts of the whistle which possibly appeared to be longer than usual. Checks of the signals given by this man have been made and no irregularities observed.

Our rules do not require the placing of a lighted red lantern on the rear platform of passenger trains. As per the standard code, two lights bracketted from the side of the rear coach are used as markers. It is the practice to carry a lighted red lantern inside the rear car where it is ready for immediate use in flagging.

Our Train 5 is a very heavy overland train. It is not uncommon in local territory where large trains are handled, for the conductor to overlook passengers who are traveling a short distance, and in many cases the passenger who has been overlooked mails his ticket, together with a statement of the circumstances, to some officer of the company.

W. R. SCOTT,
Vice-President and General Manager, Southern Pacific.

## MULTI-ROUTE TICKET FORMS

CHICAGO.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In the interest of accuracy I would like to say in connection with the article concerning "Multi-route Interline Tickets" on pages 885 and 886 of the *Railway Age Gazette* of April 21, that this style of ticket was evolved some years ago by a joint committee, consisting of members of the Association of American Railway Accounting Officers and of the General Passenger and Ticket Agents' Associations. After the new ticket had the approval of the two associations patents were applied for by W. J. Cannon, assistant general passenger agent, C. M. & St. P., and the writer, then auditor of passenger traffic for the Rock Island lines, and assigned to the American Association of Passenger Traffic Officers, which bore the expense.

The fact that the applications for the patents were made by Mr. Cannon and myself does not imply that we had a more active part in formulating the new ticket than other members of the joint committee; we were selected for the purpose as representatives of the two associations interested. If any special credit is due any one person it should go to the late A. D. Joslin, then auditor of passenger receipts of the Illinois Central, whose helpful suggestions at the beginning of the work of the joint committee all other members may recall.

The pronounced advantages of the new style of ticket should lead to its general adoption.

A. HERMANY,
Auditor Disbursements, Rock Island Lines.

## AIR BRAKE MAINTENANCE

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read with a great deal of interest J. T. Slattery's letter on the Air Brake Association in your issue of April 14.

First, I want to concur in all that Mr. Slattery has said regarding the better maintenance of air brakes on freight equipment. This is a question that has been up many times, and at the last M. C. B. convention a paper was read calling the attention of all the railroads to the proper maintenance of air brakes and the parts pertaining thereto.

It is useless for one railroad to attempt to do all the adjusting and testing of air brakes. Many of the roads have gone to the expense of fitting up terminals with air testing racks and have the terminals equipped with air so they can have proper pressure to test cars and trains while they are in the yards.

I appreciate the good work which the Air Brake Association has done in calling attention to the importance of properly maintaining brakes, but unless mechanical and operating officers provide the means and give the time for proper inspection and repairing of air brakes we will never get any results.

Under the Federal laws we are compelled to have at least 85 per cent of the cars in a train in good condition and the sooner that officers wake up to the fact that this is a question that needs something more than talking about to get results the better it will be for all concerned. Simply accepting cars and getting rid of them without making other repairs than just enough to clear the law will not keep up the air brakes on equipment.

The M. C. B. rules are explicit as to this, and prices for doing the work on air brakes are such that the companies that do it will not be the losers. It is right up to each and every railroad, large and small to do its part, particularly in adjusting the brakes and cleaning and testing the triples properly.

Railroads are made up largely of departments. Operating officers have their special duties, mechanical department officers have theirs, and when we consider the importance of the air brakes and their maintenance and of the good work that has been done by the Air Brake Association we certainly should give that association our hearty support and take some notice of its recommendations regarding this important question.

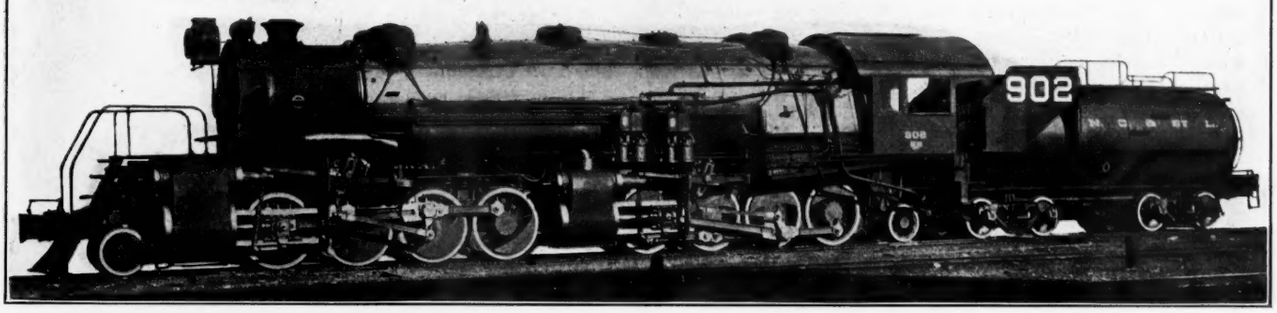
The men that compose the Air Brake Association are, as a class, of high order, and I thoroughly agree with Mr. Slattery that they need the backing of all railroads in the good work they are doing. It is also up to all railroads to pay more attention to the care of air brakes.

This is a live question; our company has a large force of men attending to the maintainance of air brakes.

F. W. BRAZIER,
Supt. Rolling Stock, New York Central.

# Mallet Locomotives for the N. C. & St. L.

**Will Replace Two Mikado Type Locomotives in Pusher Service on Two Per Cent Grades; Axle Loads 53,800 lb.**




*Mallet Locomotive for Pusher Service on the Nashville, Chattanooga & St. Louis.*

THE Nashville, Chattanooga & St. Louis has recently received from the Baldwin Locomotive Works three Mallet articulated locomotives of the 2-8-8-2 type, which will be used in main line pusher service on two per cent grades. Heretofore full tonnage trains have been handled on these grades by three locomotives. The class L-1 Mikado type locomotives, which are the heaviest road engines used on this line, develop a tractive effort of 49,500 lb. and carry 205,000 lb. on the drivers. Each of the new Mallets is equivalent in hauling capacity to two of the Mikados, as it develops a tractive effort of 99,000 lb. working compound, and carries 430,300 lb. on the driving wheels. In the present instance, therefore, the operating conditions were clearly defined, and the new locomotives have been specially designed to meet them. The locomotives will be handled on 90-ft. turntables, and will traverse curves up to 16 deg. 54 min. The front and back driving-wheels have a lateral play of 7/8 in. between rails and flanges, while on all the remaining wheels the play is 3/4 in. Flanged tires are used throughout.

The boiler barrel is built with four rings, the second being conical and increasing the shell diameter from 88 to 98 inches. The third and fourth rings are built of plate 1 in. thick, making the outside diameter at the throat 100 in. The longitudinal seams are welded at the ends, and have a strength equal to 90 per cent of the solid plate.

The firebox has a combustion chamber 58 in. long. The four tubes which support the brick arch, extend from the bottom of the combustion chamber to the back sheet of the firebox, an arrangement which promotes circulation in the long horizontal water-space under the combustion chamber. The sides and crown of the inside firebox are in one piece, and this is welded to the sheet which forms the sides, crown and bottom of the combustion chamber. The seam on the bottom center line of the combustion chamber is also welded, and the tubes are welded into the back tubesheet. Four rows of Baldwin expansion stays support the forward end of the combustion chamber crown and flexible stays are liberally used in the water-logs.

The safety valves are mounted in a casting which is placed over a 26-in. opening in the shell, just forward of the combustion chamber. This permits ready access to the interior of the boiler.

The Standard stoker is used. The ashpan is arranged with three hoppers, the front hopper extending the full width of the firebox, while the remaining two are placed, one on each side, between the rear drivers and trailing truck. The space in the center between the two rear hoppers is occupied by the stoker mechanism.

The throttle is of the improved Rushton type with a drifting valve. Superheated steam is conveyed from the headers in the smokebox through outside horizontal pipes to the high-pressure steam chests, where the distribution is controlled by 15-in. piston valves. Similar valves are used on the low-pressure cylinders. The Baldwin starting valve is applied to these locomotives. Live steam at reduced pressure can be admitted to the low-pressure cylinders at starting through a small pipe which is tapped into the receiver pipe and is connected to a lever valve placed in the cab.

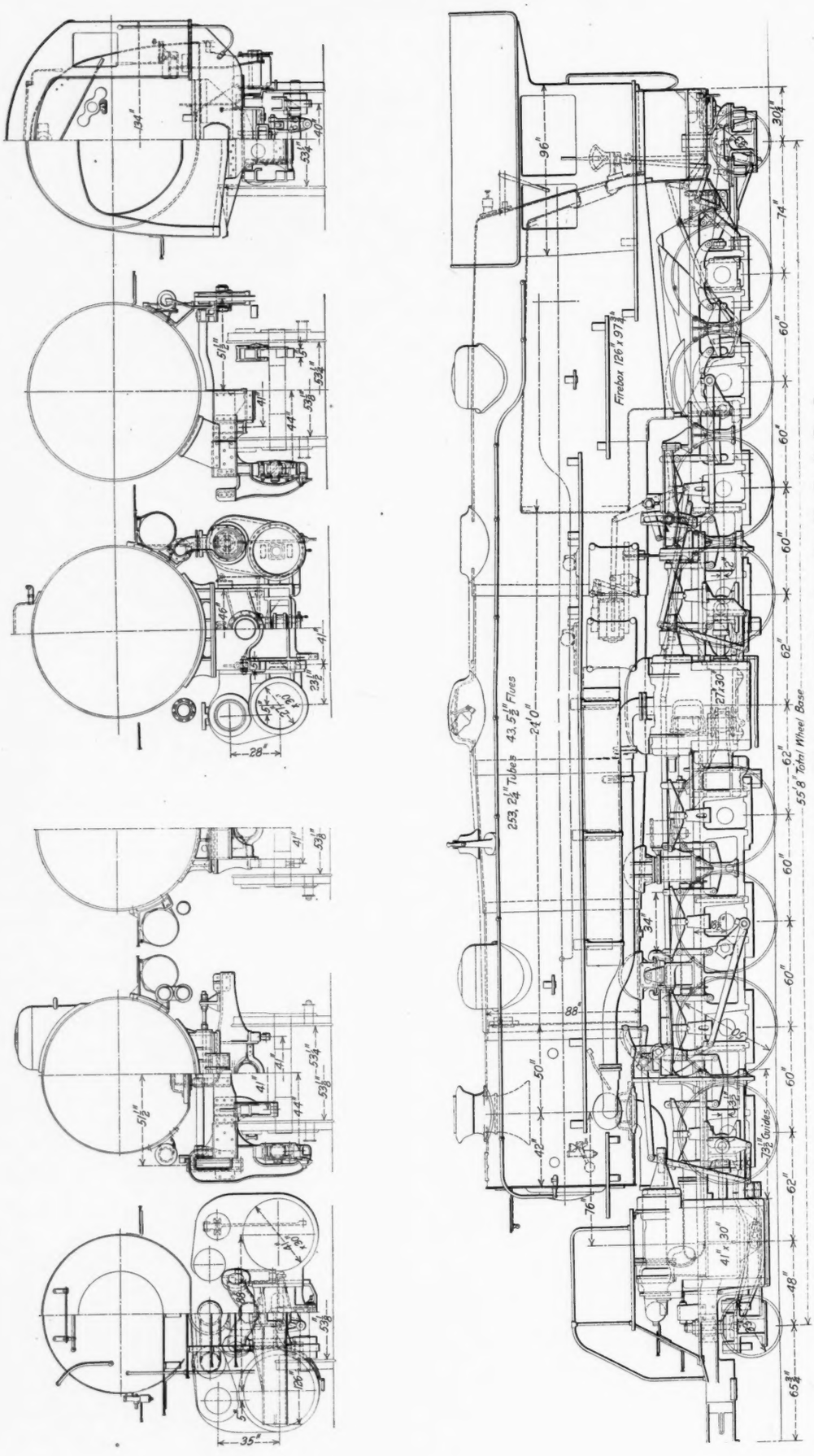
The valve motion is of the Walschaert type, controlled by the Ragonnet power reverse mechanism. The motion work, tumbling shafts and reach rod connections are designed in accordance with the regular practice of the builders. The pistons have cast steel bodies of dished section with iron bearing rims cast on. The rims are widened at the bottom and no tail rods are used.

The cylinders are cast separate from the saddles. Each high pressure cylinder is secured to its saddle by 41 bolts; 13 of these bolts pass through the frame, which extends forward between the cylinder and saddle. The saddle consists of two steel castings placed one above the other. The lower casting supports the hinge-pin for the articulated connection, and has in it a cavity in which the ball joint at the back end of the receiver pipe is seated. This cavity is drained through a suitable pipe, connected to a cock which is controlled by the high-pressure cylinder cock rigging.

The vertical plane of the joint between the receiver pipe and each low pressure cylinder, makes an angle of 45 deg. with the cylinder center line. In order to make the cylinders interchangeable, each casting has two receiver pipe connections, one of which is closed by a cap. The exhaust passes out at the front end of the casting.

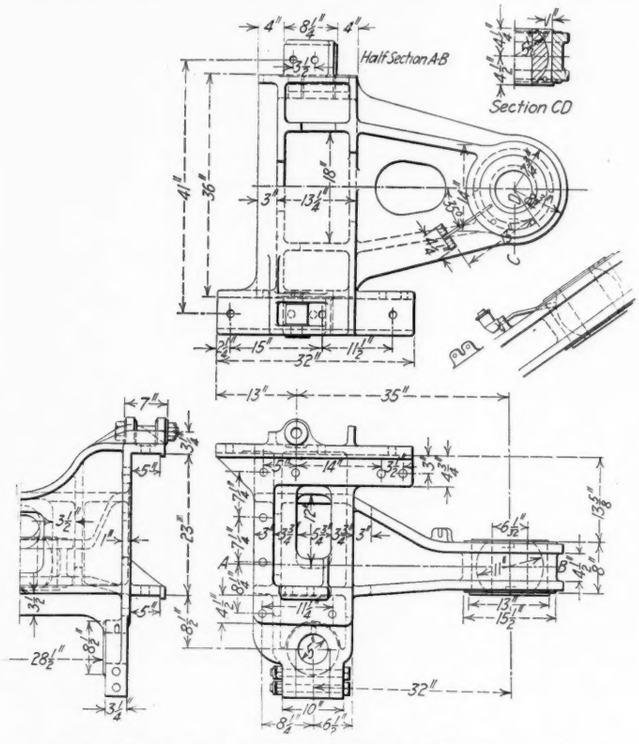
The front frames terminate just back of the low pressure cylinders, where they are bolted and keyed to a large steel casting. The low pressure cylinders are secured directly to this casting, each being held in place by 22 horizontal bolts 1½ in. in diameter. The vertical faces of the casting are 28⅞ in. high, so that a large bearing area is provided. The keys are planed in pairs and are driven into vertical keyways, with their tapered faces in contact. The lugs which constitute the fulcrum for the forward equalizing beam, are integral parts of this casting, as are also the extensions to which the front deck plate is keyed and bolted.

The articulated connection between the front and rear




Elevation and Sections of the Mallet Locomotives for the N. C. & St. L.

frames is formed by a cast steel radius bar, which is securely bolted and keyed to the top and bottom rails of the front frames. This radius bar has a ball-jointed connection with the hinge-pin. The ball is of case-hardened wrought-iron, and is held in place by a divided bushing of the same material, which is fitted into the radius bar. The two halves of the bushing are doweled together, and dowels also prevent them




**Articulating Casting with Ball Joint Pin Connection**

from turning in the radius bar. An oil cup is provided for lubricating the surface of the ball. With this connection there is no danger of binding at the joint when passing over uneven track or changes in grade.

The boiler is supported on the front frames by two bearers, both of which are normally under load. In each case the wearing shoe consists of a steel plate with a brass wearing plate riveted to its upper side, the top casting of the waist bearer resting on the brass plate. The front bearer carries the controlling spring, and also a pair of cast steel clamps which prevent the frames from dropping away from the boiler when lifting the locomotive.

The lower casting of the rear bearer supports the brake cylinders for the forward group of driving wheels, and the rear brake cylinders are supported by the high-pressure guide-yoke. The brake shoes bear on the fronts of the forward group of drivers and on the backs of the wheels in the rear group. The brake equipment includes two 8½-in. cross compound pumps, and 100,000 cu. in. of reservoir capacity are provided.

Sand can be delivered at the front or rear of each group of driving-wheels. The sand boxes are four in number, being placed right and left to keep within the height limit. For the same reason, the bell is placed on the left-hand side of the center line of the boiler.

The tenders supplied with these locomotives are of the Vanderbilt type, but the intention is to interchange them with rectangular tenders which are at present being used behind passenger locomotives. The Vanderbilt tender is rendering excellent service on this line.

The principal dimensions and data for these engines is given in the following table:

*General Data*

| | |
|---|---|
| Gage | 4 ft. 8½ in. |
| Service | Freight |
| Fuel | Bit. coal |
| Tractive effort | 99,000 lb. |
| Weight in working order | 469,400 lb. |
| Weight on drivers | 430,300 lb. |
| Weight on leading truck | 20,100 lb. |
| Weight on trailing truck | 19,000 lb. |
| Weight of engine and tender in working order | 635,000 lb. |
| Wheel base, rigid | 15 ft. 0 in. |
| Wheel base, driving | 40 ft. 4 in. |
| Wheel base, total | 55 ft. 8 in. |
| Wheel base, engine and tender | 85 ft. 7¾ in. |

*Ratios*

| | |
|---|---|
| Weight on drivers ÷ tractive effort | 4.3 |
| Total weight ÷ tractive effort | 4.7 |
| Tractive effort × diam. drivers ÷ equivalent heating surface* | 756.7 |
| Equivalent heating surface* ÷ grate area | 85.7 |
| Firebox heating surface ÷ equivalent heating surface,* per cent | 5.3 |
| Weight on drivers ÷ equivalent heating surface* | 58.7 |
| Total weight ÷ equivalent heating surface* | 64.1 |
| Volume of equivalent simple cylinders | 28.2 cu. ft. |
| Equivalent heating surface* ÷ vol. equiv. simple cylinders | 259.8 |
| Grate area ÷ vol. equiv. simple cylinders | 3.0 |

*Cylinders*

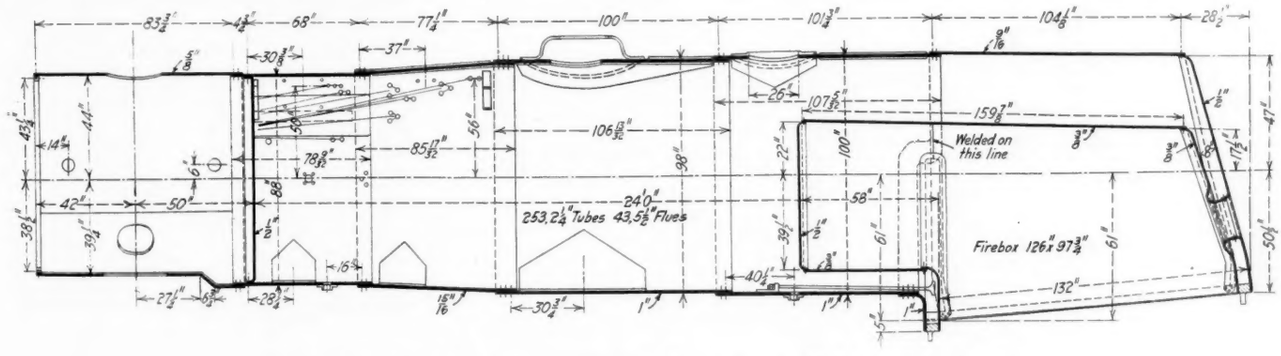
| | |
|---|---|
| Kind | Compound |
| Diameter and stroke | 27 in. and 41 in. by 30 in. |

*Wheels*

| | |
|---|---|
| Driving, diameter over tires | 56 in. |
| Driving, thickness of tires | 3 in. |
| Driving journals, main, diameter and length | 11 in. by 12 in. |
| Driving journals, others, diameter and length | 9½ in. by 12 in. |
| Engine truck wheels, diameter | 33 in. |
| Engine truck, journals | 5½ in. by 12 in. |
| Trailing truck wheels, diameter | 33 in. |
| Trailing truck, journals | 5½ in. by 12 in. |

*Boiler*

| | |
|---|---|
| Style | Conical |
| Working pressure | 210 lb. per sq. in. |
| Outside diameter of first ring | 88 in. |




**Boiler of the Nashville, Chattanooga & St. Louis Mallet Locomotives**

| | |
|---|---|
| Firebox, length and width | 126 in. by 97¾ in. |
| Firebox plates, thickness | Tube, ½ in.; sides, back and crown, ⅜ in. |
| Firebox, water space | 5 in. |
| Tubes, number and outside diameter | 253—2¼ in. |
| Flues, number and outside diameter | 43—5½ in. |
| Tubes and flues, length | 24 ft. |
| Heating surface, tubes and flues | 5,044 sq. ft. |
| Heating surface, firebox | 389⅛ sq. ft. |
| Heating surface, total | 5,433 sq. ft. |
| Superheater heating surface | 1,262 sq. ft. |
| Equivalent heating surface* | 7,326 sq. ft. |
| Grate area | 85.5 sq. ft. |

*Tender*

| | |
|---|---|
| Weight | 165,600 lb. |
| Wheels, diameter | 36 in. |
| Journals, diameter and length | 5½ in. by 10 in. |
| Water capacity | 8,500 gal. |
| Coal capacity | 14 tons |

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.
†Contains 45 sq. ft. arch tube heating surface.
§Contains 116 sq. ft. combustion chamber heating surface.

## PROSPECTS OF BILL-OF-LADING LEGISLATION

By W. L. Stoddard

WASHINGTON, May 3.

The prospects of a bill-of-lading law are brightening. C. C. Wright, representing the Chicago & North Western, the Burlington, and the Rock Island roads, and Francis B. James, chairman of the Committee of the American Bar Association, have agreed upon a compromise bill. The conference between Messrs. Wright and James took place at the suggestion of Chairman Adamson of the House Committee. At the hearing last week it became clear that the differences narrowed down to a single point, and a printed memorandum embodying the compromise was laid before the House Committee.

The proposed compromise bill leaves Sections 20 and 22 as they are in the Senate bill, but for Section 21 it substitutes entirely new language. Section 20 provides that when goods are loaded by a carrier, the carrier "shall count the packages of goods, if package freight, and ascertain the kind and quantity if bulk freight, and such carrier shall not, in such cases, insert 'shipper's weight, load, and count,' or other words of like purport . . ."

Section 22 as agreed upon reads as follows:

"That if a bill-of-lading has been issued by a carrier or on his behalf by an agent or employee the scope of whose actual or apparent authority includes the issuing of bills-of-lading, the carrier shall be liable to (a) the consignee named in a straight bill or (b) the holder of an order bill, who has given value in good faith, relying upon the description therein of the goods, for damages caused by the non-receipt by the carrier of all or part of the goods or their failure to correspond with the description thereof in the bill at the time of its issue."

Section 21 of the Pomerene bill as it passed the Senate required the carrier to count packages when loaded by shipper. The compromise section is in full as follows:

Sec. 21. That when package freight or bulk freight is loaded by a shipper and the goods are described in a bill-of-lading merely by a statement of marks or labels upon them or upon packages containing them, or by a statement that the goods are said to be goods of a certain kind or quantity, or in a certain condition, or it is stated in the bill-of-lading that packages are said to contain goods of a certain kind or quantity or in a certain condition, or that the contents or condition of the contents of packages are unknown, or words of like purport are contained in the bill-of-lading, such statements, if true, shall not make liable the carrier issuing the bill-of-lading, although the goods are not of the kind or quantity or in the condition which the marks or labels upon them indicate, or of the kind or quantity or in the condition they were said to be by the consignor. The carrier may also by inserting in the bill-of-lading the words "shipper's weight, load and count" or other words of like purport indicate that the goods were loaded by the shipper and the description of them made by him; and if such statement be true, the carrier shall not be liable for damages caused by the improper loading or by the non-receipt or by the misdescription of the goods described in the bill-of-lading.

It seems likely that the House committee will report the Pomerene bill with the changes noted, together with some alterations of lesser importance.

Ex-Senator Charles J. Faulkner appeared last week on behalf of the railroads and presented a constitutional argument against the Pomerene bill; but it is safe to say that the full understanding reached by Messrs. James and Wright has materially affected the course of the bill, and more than superficial indications seem to point to ultimate favorable action by the committee. As before stated, the bill-of-lading bill has been through the Senate three times, but has always struck a snag in the lower house. This snag seems largely to have been removed.

The Senate has passed bill 3,769, prescribing a minimum penalty of $100 for violations of the hours-of-service law, a change which is in accordance with recommendations of the Interstate Commerce Commission and of the railroad brotherhoods.

Senator Cummins, of Iowa, has introduced a bill (S. 3069), and it has already been reported by the Senate Committee, to amend the Interstate Commerce law so as to cure a defect in his amendment, adopted last year, forbidding carriers to limit their liability for goods lost or damaged. The amendment now proposed would change this provision, and the clause forbidding carriers to limit their liability would not apply to baggage carried on passenger trains, or to freight (except livestock) on which rates are based on a released value. Such releases could be given only when expressly authorized by the Interstate Commerce Commission.

## PSYCHOLOGY IN RAILROAD OPERATION

At a meeting of The Economic Psychology Association, held at Columbia University, New York, on the evening of April 27, a paper of considerable interest to railroad officers was presented. This was the second meeting of a new association organized "to conduct at once practical investigations, by means of the co-operation of scientists and business firms, to establish standards and concrete knowledge concerning the human equation in business and industry, for the purpose of making available more definite knowledge of various business and economic factors of importance." The association already has under way the development of practical methods and tests for quickly determining the abilities of stenographers, so that applicants may be graded into an authoritative series of grades. Investigations aiming to devise tests by which individuals may be accurately selected for various other business and industrial positions, are to be undertaken.

After the opening remarks of the chairman, J. George Frederick, outlining the purposes of the organization, Professor Hugo Muensterberg addressed the meeting. He pointed out that scientific psychology had been applied successively, in a practical way, to educational work, to physiological investigation and, in a smaller way, to legal procedure. It is now beginning to be applied, he said, to practical business and industrial problems, with excellent prospects of great usefulness in this field.

The paper which brought to the meeting a number of railroad officers, including several signal engineers, was prepared by O. V. Fry, who has for some time been conducting investigations on the Pennsylvania, at Altoona, Pa. Mr. Fry described apparatus that he had devised for determining the quickness and correctness of different men in their perception of day and night signals under conditions representing fog and smoke of various densities, and explained the tests made with this apparatus. His paper also went into the circumstances of a large number of cases of over-running signals.

On account of the limited time at the meeting, the paper could not be read in full and there was no opportunity for discussion. The persons present were therefore given little more than a glimpse of the line of investigation that is being developed and followed out. The most that can be said at present is that the work promises valuable results both in the way of new light on some obscure subjects and in the development of means for selecting employees experimentally rather than by the slow and sometimes disastrous process of recording the errors which a man makes in a more or less prolonged term of service. The paper is to be printed and it is expected that a day will later be devoted to a fuller presentaiion and discussion of the subject.

Mr. Frederick was elected president of the association and J. J. Aspatow, 55 Hanson place, Brooklyn, N. Y., secretary.

# The Design of Large Passenger Terminals*

## A Discussion of the Essential Features Which Must be Considered When Planning a Large, Modern Station

By T. L. Busfield

It is only necessary to compare the modern railway passenger terminal with some of the older types, to be struck with the great advances made for the benefit both of the public and the railways. Conveniences and arrangements have been provided which were undreamed of a few years ago. Some of the most important lines upon which advances have been made are the segregation of traffic, causing less annoyance and confusion to passengers with different objectives in using a terminal; improved track-layouts and electric interlocking plants, enabling train movements to be made with greater safety and facility; improved methods of track construction, reducing maintenance costs and the inconvenience of renewals; and graphic methods of studying terminal operations.

Dealing with the subject from the point of view of the engineer, one's first impression is that a study of existing terminals is of little real value in the preparation of a design for a new terminal owing to the apparent lack of similarity in all of the important features of the terminals. A closer and more intimate study, however, reveals the important fact, that notwithstanding large differences in shape, size, traffic and local conditions, there is to be found a remarkable similarity in the general principles upon which the designs are being carried out in the terminals of today.

The subject of architecture as applied to passenger terminals is one on which, no doubt, volumes could be written by competent authorities, but there are one or two points to which it may not be inopportune to refer. One of these is the external design and appearance of the station building which should naturally express the generally accepted idea of a railway station, and also, especially in the case of a large city, have the character of a monumental gateway and entrance to a great city and great railroad. The excellence with which it is possible to carry out this symbolic idea is particularly well illustrated in the Washington Union Station.

Another important point is the necessity of co-operation between engineers, architects and operating officers. The architect is possibly a little inclined to err on the side of "a thing of beauty is a joy forever," while the engineer is rather apt to be purely utilitarian in his ideas, and the operating officers are naturally most concerned in being able to handle the traffic in and out of the terminal in the most efficient manner. In order to obtain the best all-round results a thorough co-operation of the different departments is essential. Instead of turning over the preliminary plans to the architects, as is frequently done, a thorough study of operating methods and of traffic and engineering problems should first be made, preferably by a committee representing the various departments interested.

Still another feature which both architects and engineers should try to remedy, is the long distance the passenger has to walk between the entrance to the station and his train. Any effort to reduce this distance to a minimum will be well repaid. In one of the most modern terminals in the United States, the average passenger walks a distance of approximately 1,000 ft.

Mention must also be made of the rather remarkable differences in sizes of waiting rooms and other facilities, even in terminals which cater to the same volume and nature of traffic. Taking a number of terminals handling all kinds of traffic, there seems to be no relationship between the number of passengers catered to, and the sizes of waiting rooms and other parts of the building. A study of the actual figures reveals the fact that the sizes of waiting rooms vary from 0.1 to 5.0 sq. ft. per passenger using the station.

The electrification of railways in terminal zones has done more than any other single circumstance to alter and improve the conditions existing in large passenger stations. Apart from the improved atmospheric conditions, electric operation has made possible a type of terminal in which the tracks are entirely underground, or covered over by the station building or offices. A terminal such as the Grand Central in New York would have been an impossibility without the use of electric power.

In addition to this feature there are others of equal importance developed by the use of the electric locomotive. The greater acceleration of this type of locomotive compared with the steam engine results in the general speeding up of the train and switching movements in the yards is a great benefit at any large traffic center. It is also often possible to utilize steeper grades when electric locomotives are used, this feature again being illustrated in the Grand Central, New York, where there are grades of three per cent leading to the suburban level.

There has been a marked change in the standard form of trainshed, the old type of large single span roof being more or less obsolete as far as the modern terminal is concerned. This type had a number of disadvantages which are mostly overcome by the improved form of umbrella shed now used. Apart from the abolition of the smoke nuisance it has the advantage over the large span roof in that it is less costly to erect and to maintain, and is also safer.

### General Features

It is only in rare cases that there is very much opportunity for making an unhampered selection in a large city, but when it is possible to choose a site, with only the best interests of the railway company and the public to be studied, the nature of the traffic to be dealt with must first be determined, because this feature more than any other will fix the best location. If the terminal is to cater to a large proportion of suburban traffic it should be located so that the "commuter" should be able to reach his city office with the minimum of delay en route. This means that it must be as central as possible to the business district. In cases where this district is spread over large or straggling areas, effective results would be obtained by locating the terminal adjacent to, or preferably in direct connection with, some feeder such as a subway or elevated road, which would in all probability not only serve the business district, but also that which is next in importance, the shopping and hotel district.

In the case of the terminal which is to cater to through traffic, the travelers will come largely from residential, hotel or shopping districts, or from other railways or steamship piers. In some cases it might be correctly assumed that there would be a preponderance of traffic from and to one of these sources, and the terminal could be located accordingly. The importance of location, however, is not always of such vital importance in the case of the station for long distance travel,

*Presented before the Canadian Society of Civil Engineers, Montreal, on March 9, 1916.

as the passenger will, as a rule, use some form of conveyance between the terminal and his final destination, or between his starting point and the terminal as the case may be.

In a situation where there is much competition between rival railways, the question of location is naturally of extreme importance, and the problem is complicated by the fact that the ideal location of today may be quite out of the way in ten years' time. In selecting the site good judgment has to be used in order that undue restrictions will not occur, such as might be caused by streets, valuable properties and natural conditions. It has often happened that restrictions of this nature have occurred to such an extent as to be actually obstructive to the construction of an efficient layout of the tracks and buildings.

It is not only the natural controlling features within the station site that affect the layout of any terminal, but it is also necessary to make a complete study of the immediate neighborhood, both with regard to the railway, and also the adjoining part of the city. One feature playing a prominent part in any design is the elevation of the tracks, in relation to the natural ground level, as terminals with the approach tracks either above or below the latter will usually be of a very different type from those where the tracks are at grade. The two-story terminal has a number of advantages, such as economy of ground space, facility of handling baggage at a separate level from the platforms, and the segregation of traffic. The relative location of the station, the coach yards and engine sheds have an important bearing on the final layout of the terminal on account of the switching movements necessary for the moving of the empty trains. It is of importance that the method of operation should be intimately studied before making even preliminary plans of the layout.

The location of the streets in the immediate vicinity of the station building is naturally another important feature to be studied, as they will, to a great extent, determine the position of the station. This is a feature which is given considerable prominence in Europe, as almost every city of any importance has a dignified and spacious approach to its railway station, frequently made into the form of a public garden. It is not to be expected that railway companies will go to the entire expense involved in every case, but it is to the interest of the municipality to see that the approaches to its "gateway" are worthy of the city, because, after all is said, the visitor's first and last impressions are those which, unconsciously, perhaps, will be retained. A terminal which may be considered a model for a fine location with regard to the immediate vicinity and approaches is the Washington Union Station. This result, however, was largely obtained by the co-operation of the District of Columbia, and the railway companies interested in the terminal.

The size of any proposed terminal is naturally dependent on the volume of anticipated traffic. This volume has to be carefully analyzed, because it is not the volume alone, but the relative percentages of suburban and main line passengers, and also the quantity of mail, baggage and express matter that determine the necessary size and requirements. The bearing of the mail, baggage and express both on track layouts and on buildings is naturally in proportion to the volume, and needs no further study. Taking the effect of the predominating kind of passenger traffic on the station building, it will be found that the commuter requires different and less facilities than the long-distance passenger..

In many large stations there is not great necessity for providing waiting rooms with large seating capacity because the train service is frequent, and at the same time there may be very little of what may be called "junction" business. On the other hand, at stations where many connections are to be made, it is necessary to provide for a large number of people in the waiting rooms.

The nature of the traffic not only affects the station building, but it also has a direct bearing on the size of the track-layout. The handling of a definite number of passengers requires less trains if they are commuters than if they are long-distance travelers, and at the same time suburban trains can be dealt with at a quicker rate than long-distance trains, because they can be unloaded quicker and do not need to be placed at their platforms so long before their schedule time for departure. This fact, however, is somewhat offset by the heavy "peak" loads that occur in conjunction with the former class of traffic at the morning and evening rush hours. Main line traffic has its variations principally with the seasons of the year, and at the same time there are a number of stations where extraordinary heavy loads have to be handled for short periods, an example of which is the inaugural crowds at Washington.

Bearing out the above statements with regard to the relationship between suburban and through traffic, the following are averages of a large number of important terminals on this continent:

| | Long-distance | Suburban |
|---|---|---|
| Passengers handled per day, per track.... | 1,141 | 4,933 |
| Number of trains per track..... | 15.4 | 29.4 |
| Passengers per train ..... | 84 | 169 |
| Time train is at platform before departure. | 27 | 14 |
| Time train is at platform after arrival..... | 16 | 8 |

On account of the differences already mentioned, in the requirements of the commuter and the express passenger it is advisable, when they both reach large proportions, to separate the one from the other as much as possible. The most notable example where the segregation of traffic has been carried out with completeness and success is the Grand Central Terminal in New York.

## Platforms

Before any plans can be commenced with any degree of detail, standards must be adopted for the size and general features of the station platforms because it will be their necessary number and dimensions that will partly determine the size of the terminal as a whole. The platform sizes, in turn, will depend not only on the traffic, but on the methods of handling baggage, and on the means of approach to the platforms.

The old established method of conveying baggage from the train to the baggage room, and vice versa, by trucking on the platforms is too familiar to require any description, and the objections to the method are equally obvious. An improvement, however, can be made on this system by providing special trucking platforms reserved for the sole use of baggage trucks, and in terminals of the one level, headhouse type this method has been adopted with satisfactory results when the traffic has not been of a very heavy nature. If a large volume of traffic is to be dealt with two objections arise, one that confusion is apt to occur between passengers and trucks at the ends of the platforms, and the other that the trucking platforms occupy a very considerable amount of valuable space.

There is no question but that the most satisfactory way of dealing with this problem is that of trucking either above or below the track level, and raising or lowering the trucks, as the case may be, to the platforms at a point approximately opposite the baggage cars. In terminals where this system is in vogue baggage may usually be said to be conspicuous by its absence. It is only in certain situations, however, that this system can be readily installed, the expense of building a subway or bridge, together with the necessary elevators, would, in many cases, be entirely out of proportion to the benefits received.

The modern terminal being built on two or more levels readily adapts itself to the isolation of the baggage trucking. Notable examples of this method are the Grand Central in New York, where the baggage is handled on a bridge over the tracks and lowered to the platforms near the baggage

cars, and the Pennsylvania Terminal, New York, where the baggage is lowered to subways below the track level, running both longitudinally and transversely, and raised to the platforms by elevators.

In terminals where the concourse and baggage rooms are above or below the platform level, stairs and elevators, or as an alternative, ramps, must be provided, and before any conclusions can be formed as to the platform widths, a general idea must be had of the nature and extent of such obstructions to the clear width of the platforms. In the case of commuter traffic a stairway 20 ft. wide is not uncommon, but is confined to those situations where large crowds have to be handled in a very short space of time, more particularly in subway stations than in railroad terminals. Taking the more general situation where not more than one or two hundred people per train are provided for, if the traffic on any one stairway can be confined to one direction only, a width of 6 ft. is sufficient, and one as narrow as 5 ft. has been used without inconvenience to passengers. It is often necessary, however, to provide stairways for traffic in both directions, in which case a width of at least 8 ft. is advisable. Of course, the width is to a large extent controlled by the rapidity with which it is necessary to clear a platform. In this connection the following information supplied to the writer by J. H. Harris, New York, is of particular interest.

"Recent experiments tried at the Brooklyn Bridge show that the maximum upstairs movement was 20 people per foot of width per minute with an average of 15. Moving downstairs the figures were 18 people per foot, with an average of 13. These figures were obtained by the Hudson and Manhattan on stairs of average height, and 4 ft. or over in width. They also found that passengers moving on a level passageway or on a ramp up to as steep as 10 per cent moved at a rate of 30 people per foot of width per minute."

The recognized practice in modern terminal construction is to eliminate stairways as much as possible by the substitution of ramps, the slopes of which have to suit local conditions, but which should not exceed 12 per cent. When space permits 8 to 10 per cent makes a slope well favored by the public. Elevators are used for the transference of both passengers and baggage from platforms to concourse, and vice versa, but for the former purpose they are generally used in a purely subsidiary manner, and rarely exceed 5 or 6 ft. in width. Baggage elevators, on the other hand, have to be sufficiently large to accommodate readily the largest baggage trucks sometimes even two at a time, with the result that it is not unusual to find an overall width of 8 or 9 ft.

Having established in a general way the baggage handling system, and also the nature and extent of obstructions on the platforms, it is possible to determine a maximum width and also widths to cover special conditions. In a terminal of the headhouse type with platforms approached directly from the concourse with practically no obstructions, with the possible exception of a single row of columns supporting the trainshed, a narrower width can be adopted safely than in the case where the platforms are approached by elevators or stairways, particularly as these obstructions generally occur at a point where congestion is liable to be greatest. Reverting to first principles, it is necessary that there should be room for at least two people carrying handbags to pass between the widest obstructions and the edge of the platform with the only exception of certain cases where the obstruction is isolated from the busy part of the platform. This requires a width of at least 5 ft., and preferably 6 ft., so it is safe to say that the platform should be not less than 12 ft. wider than the widest elevator or stairway, giving a minimum width overall of 18 to 20 ft. It will be found that the standard practice of a great many roads conforms to these dimensions, and for conditions of this nature vary between the limits of 18 to 22 ft. In reaching this conclusion it is assumed that any obstructions are few in number.

When a platform is practically free from structures and baggage trucking is eliminated a width of about 16 ft. is found from experience to give satisfactory results, and in other cases, such as where the platforms are only occasionally used for local trains, perhaps, this width can again be reduced. Widths as great as 30 ft. are sometimes necessary when a heavy and continuous inbound commuter traffic has to be dealt with expeditiously.

It is impossible to fix any definite maximum or minimum lengths for the platforms in terminals in general, the sizes of trains varying so extensively on different railways. Once the maximum essential length is established the remaining platforms will be more or less determined by the nature of the track layout. In designing the latter it is possible, especially in a large layout, to obtain a number of alternative lengths, and it is always advisable to keep the platforms as long as possible, the trains of today apparently reaching no limits with regard to their length.

The method of train operation will have an important bearing on this subject, because it is not an unusual practice in terminals with through tracks to despatch two trains in opposite directions from the same platforms, and there are instances of even three trains being allotted to one platform. The practice of using one platform for two trains is not applicable as a general rule to stations of the headhouse type, on account of the distance to be walked by the passengers, but in cases where the station is located in the center of the layout, and the tracks reached by means of a bridge or subway, there are no serious objections, and it has been put into use at the new Union Station, Kansas City.

Although platforms level with the car floors have always been the standard practice in Great Britain, it is only in recent years that they have been in use at all on this continent, except on subways or elevated roads. The Pennsylvania must be given the credit for first adopting the high platform in a railway terminal in America, and their operation proved so successful that the example set by this road was immediately followed by the New York Central, and today they are in extensive use on many of the lines in the East.

The advantages of the high platforms are: Facility and rapidity with which trains may be loaded or unloaded; the prevention of the public crossing the track; in stations below street level, a saving of about 3 ft. in the vertical height to be traveled by the passengers, and in some cases they form a convenient place for the housing of ducts, cables, elevator machinery, signal equipment, etc.

On the other hand they have certain disadvantages when used in conjunction with our present system of terminal operation, in addition to that of the additional cost. The most important factor against their use is that the passenger coaches must be remodelled to serve both high and low platforms. A second objection to their use is the difficulty of trucking across the tracks, and a third is the fact that a special form of baggage truck must be provided, having its floor as low as possible. These disadvantages are not so serious that they cannot be readily overcome. A rather more serious disadvantage which sometimes arises in connection with the use of the high platform is that if a switch has to be placed in a track within the limits of the platform, it becomes necessary to put a curve in the line of the platform edge in order to provide sufficient clearance for the swing of the ends of coaches using the switch. This is not only unsightly, but also dangerous, because if a car door happens to stop opposite the curve, an unobservant person might readily step into the space left between the car and the edge of the platform.

### The Track-Layout

Before the track-layout can be designed intelligently it is necessary to make a complete study of the traffic requirements

and the proposed operating methods. The actual traffic requirements are sometimes rather difficult to obtain, particularly in a new terminal, where there will be no existing data to form a basis for the calculations, and in any case, provision has to be made, not only for the requirements of today, but also for those of 20 years hence.

Once, however, sufficient data has been obtained, a tentative train schedule can be drawn up and used as a basis for determining the necessary trackage in the station and approaches. In order to obtain the necessary number of platform tracks to care for the heaviest traffic conditions of the day, a diagram showing the occupancy of the various platforms can be plotted. The time a suburban train is necessarily placed at the platform before departure is usually considered to be 15 min., which will give time for the small amount of baggage and mail to be loaded; the time the same train must be left at the platform after arrival is only a few minutes, sufficient to unload the passengers and perhaps a truck load of local baggage. In the case of a long-distance train, with the exception of night trains which are generally placed some hours before their departure time, a period of between 20 and 30 min. is considered essential, but will depend upon local conditions. At many large terminals baggage and express matter is loaded on the cars at special platforms and only the late arrivals are put on the train after it has been placed at the platform, in which case a period of 20 min. should be ample. When, however, all the baggage, etc., is to be loaded directly from the passenger platform, 30 min. will not be too long if the amount to be handled is large. Similarly the length of time the train should be left at the platform after its arrival will largely depend on the manner in which the baggage is dealt with.

The next important study is the method of operation and its effect on the track-layout. The simplest way of handling the trains, involving the minimum number of movements, is that of backing the empty trains in and out of the trainshed by their road-engines, necessitating only two movements per train. The most complicated method is that of actually making up the train at the platform, bringing baggage cars from the baggage platform, mail cars from the mail room, express cars from the express sheds, and the passenger cars from the storage or cleaning yards. These movements would, as a rule, be made by the yard engine, the road engine finally backing on to the train after as many as 15 or 20 movements have been made over the throat tracks. Between these two methods there may be found a large variety of intermediate systems, involving more or less movements as the case may be.

Dealing now with the actual preparation of the track plan, the ideal to be sought after in the layout is that it shall not only be capable of handling the maximum traffic as a whole, but also that the maximum capacity of the various component parts shall be so balanced that undue congestion will not be occurring in some parts while others are comparatively idle, or at any rate not being used to their capacity. In making a study of these capacities, the layout can be divided into its three component parts—namely, the trainshed or platform tracks, the throat tracks, and the main-line or approach tracks. The capacity of the former will depend on their number and on the nature of the traffic, and can be determined by means of a diagram, or made to suit the traffic conditions. The capacity of the latter will depend on their number, the spacing of the signals, and the speed of the trains which will be determined by the grades and other local conditions. When these two capacities have been balanced it is then necessary to connect the tracks in the trainshed with the main-lines in such a way that there will be no points at which undue restriction will occur. This is frequently the most difficult problem in connection with the layout and in a busy terminal can only be satisfactorily dealt with by providing the means for trains to move in opposite directions with the minimum of interference.

There are three main types of track-layouts, those with stub-tracks only, those with both stub and through tracks, and those with through tracks only. In modern terminal practice there is a marked tendency to replace the stub-track type by employing tracks running through the station with connections at each end. The advantages of this method are numerous, one of the most important being the facility with which all the various train movements and switching work can be done as compared with the stub type. As a rule, however, it is difficult to build through tracks unless local conditions are entirely favorable, such as would be obtained when the traffic runs in both directions from the terminal.

The principle of the throat of a terminal is always the same, and although there is a general similarity in the layouts of various terminals, a study must be made of the particular requirements and conditions and then a layout of the throat tracks designed to suit those conditions. The first requirement is to connect every platform track with the main-lines; second, this must be done in such a way as to permit the minimum interference between the various train movements, and at the same time provide the greatest flexibility possible; third, provision must be made for the rapid exchange of cars or locomotives from any one platform to any other platform; and, fourth, connection must be provided to special tracks, where necessary, such as express, mail, storage, cleaning, etc.

A point in connection with terminal track-layouts on which there has been considerable discussion is the maximum permissible curvature for switch and other curves. With the increasing size of both road and switching engines, and all types of equipment, there has been a constant demand for flatter curves, a demand, however, which was somewhat lessened with the introduction of the electric locomotive with its short fixed wheel base. Until recent years a switch with a No. 7 frog and a corresponding curvature of about 13½ deg. was used very extensively, but this is proving to be too sharp in any terminal handling modern equipment, excessive strains being placed on locomotives, coaches and the track itself, even at restricted speeds. The maximum curvature recommended for practice today is 10 deg., corresponding to a No. 8 frog, but if No. 9 or No. 10 switches can be used without detracting from the efficiency of the layout they will be advantageous, and there are a number of terminals laid out entirely with No. 10 switches. When the electric operation was first introduced it was thought that sharper curves could be used and in some large terminals No. 6½ frogs were used in certain places, but they soon proved to be too sharp and were replaced at considerable expense by No. 8 switches. On certain tracks, however, which may be devoted entirely to multiple-unit service a considerably sharper curvature can be used, and switches as sharp as a No. 6 (20 deg. curve) may result in a very valuable economy of space.

In a large terminal it will be impossible to use one and only one standard for the switches, and it also becomes necessary in many cases to use a number of special switches for extraordinary conditions. It is important, however, that there should be as few types as possible on account of keeping up a stock of spares; there should naturally be a spare for every special frog. In the case of standard switches a few spares will be enough for a large number of switches, because, even if a very extensive accident occurs it will be possible to replace them from other parts of the railway or to obtain new ones from manufacturers.

When a terminal is being built in a city where real estate values are high, it is necessary that clearances be reduced to the minimum possible with safety. A study of conditions in a number of large terminals reveals the fact that side clearances are frequently reduced to as little as 6 ft. from the

track center, corresponding to a clearance of a little less than a foot from the side of the widest coaches. A minimum clearance of 6 ft. 6 in. from the center line is, however, more common. When the tracks are situated on curves all clearances must be increased to such an extent that the overhang of the cars either at the ends or at the center, will still have the same minimum clearance.

When high platforms are used they must be built so that they come as close as possible to the cars and they are usually built with a clearance of 5 ft. 3 in. from the center of the track when on tangent, with an increased amount when the tracks are on a curve, corresponding to the degree of the curve.

Track centers vary for different conditions, but a general standard for most classes of work may be taken as 13 ft. For the pairs of stub-tracks in the trainshed, 12 ft. centers may be used, but this leaves no space for car cleaners to work, if it should be necessary for them to perform this work while the train is in the trainshed. On the ladder tracks it is advisable to allow ample clearance and 15 ft. centers will not be found to be excessive.

## TRAIN ACCIDENTS IN FEBRUARY[1]

The following is a list of the most notable train accidents that occurred on railways of the United States in the month of February, 1916:

COLLISIONS

| Date | Road | Place | Kind of Accident | Kind of Train | Kil'd | Inj'd |
|---|---|---|---|---|---|---|
| 4. | St. Louis, I. M. & S. | Cypress J. | xc | F. & F. | 0 | 5 |
| *6. | Erie | Pt. Jervis | rc | F. & F. | 0 | 3 |
| 6. | Seaboard A. L. | Valrico | bc | P. & F. | 0 | 1 |
| 6. | Balt. & O. | Wallace | xc | P. | 1 | 0 |
| *8. | W. Pitts. Term. | Hickory | bc | P. & F. | 0 | 5 |
| 10. | Balt. & O. | Emblem | rc | F. & F. | 0 | 2 |
| 15. | Seaboard A. L. | Franklinton | bc | P. & F. | 2 | 1 |
| †20. | Spokane, P. & S. | So. Cheney | rc | P. & P. | 5 | 4 |
| †22. | N. Y. N. H. & H. | Milford | rc | P. & P. | 10 | 160 |
| 26. | N. Y. C. | Painesville | rc | F. & F. | 1 | 2 |
| 26. | Lehigh Valley | Jersey City | bc | F. & F. | 0 | 2 |
| 27. | Boston & M. | Westminster | rc | F. & F. | 1 | 0 |

DERAILMENTS

| Date | Road | Place | Cause of Derailm't | Kind of Train | Kil'd | Inj'd |
|---|---|---|---|---|---|---|
| 2. | Penn. | Seward | d. track | P. | 0 | 47 |
| 7. | C. C. C. & St. L. | Vincennes | d. bridge | P. | 2 | 0 |
| 7. | Coal & C. | Milliken | d. track | F. | 0 | 1 |
| 8. | A. T. & S. F. | Flagstaff | b. rail | P. | 0 | 0 |
| 8. | Seaboard A. L. | Vass | loose wh. | P. | 1 | 1 |
| 8. | Colorado S. | Birdseye | slide | P. | 0 | 1 |
| 17. | Carolina, C. & O. | Dante | unx | P. | 1 | 0 |
| 17. | Seaboard A. L. | Bellwood | d. truck | P. | 0 | 14 |
| 20. | Missouri, K. & T. | Henrietta | d. truck | P. | 2 | 4 |
| 21. | New York Central | Little Falls | d. eq. | F. | 1 | 0 |
| 21. | Chicago, I. & L. | Frankfort | unx | P. | 0 | 4 |
| 27. | D. L. & W. | New Milford | der. switch | F. | 2 | 0 |
| 29. | Louisville & N. | Madisonville | b. rail | P. | 0 | 1 |

The trains in collision at Cypress Junction, Ark., on the 4th, were a southbound freight and a work train. Five trainmen were injured. The collision was due to the work train being on the main track without authority.

The trains in collision near Port Jervis, N. Y., on the 6th were westbound freights. The leading train had been brought to a stop. Its caboose and six cars were derailed and the caboose fell down a bank and caught fire. Three trainmen were severely burned. The cause of the collision was the failure of the runner of the second train to run under control, as, in the circumstances, was required.

The trains in collision on the Seaboard Air Line at Valrico, Fla., on the 6th were a westbound passenger and an eastbound freight, the latter drawn by two engines. Three engines and two baggage cars were badly damaged and one engineman was injured.

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc. Butting collision——xc, Other collisions——b, Broken——d, Defective——unf, Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

The train involved in the collision at Wallace, W. Va., on the 6th was passenger No. 720. A trespasser walking along the track was killed. The train ran over a misplaced switch at about 30 miles an hour and collided with some freight cars standing on a side track. Responsibility for leaving the switch mis-set is charged against track repairers, who had been operating it to determine whether it was in working order.

The trains in collision near Hickory, Pa., on the evening of the 8th were westbound passenger No. 17 and an eastbound freight. Both trains were moving at low speed. Gas escaping from lamps in the cars ignited the wood work and two coaches were burnt up. The engineman and one brakeman of the passenger train were injured, and three passengers were slightly burned. The collision was due to failure of the freight to clear the track for the passenger, as required by rule.

The trains in collision at Emblem, Pa., on the 10th, about 2 a. m., were eastbound freights. Two trainmen were injured. The second train had passed distant and home automatic block signals set against it. It appears that the engineman had been attending too closely to the operation of the injector.

The trains in collision at Franklinton, N. C., on the 15th were the northbound Florida Limited and a southbound freight. The passenger engine, three cars in the passenger train, and six of the freight were wrecked. A fireman was killed, an engineman fatally injured, and the road foreman of engines seriously scalded. The freight had encroached on the time of the passenger.

The trains involved in the rear collision on the Spokane, Portland & Seattle at South Cheney, Wash., on the 20th were running as the second and third sections of eastbound passenger No. 4, but both were foreign trains running over this road because of floods on the Northern Pacific. One was Northern Pacific No. 2 and the other was No. 42 of the Burlington-Northern Pacific Line. No. 2 ran into No. 42. Five passengers were killed and six passengers and one employee were injured. The leading train had been stopped and it was run into by the following train, which was running at excessive speed. Improper flagging on the part of the standing train is also mentioned as a cause.

The trains in collision on the New York, New Haven & Hartford near Milford, Conn., on the 22nd were westbound passenger. The leading train, No. 79, had been stopped because of the accidental rupture of an air hose and was run into at the rear by passenger train No. 5 running at full speed. Ten persons were killed and 160 injured. One of the injured, a passenger, died on March 8. In the rear of the standing train was a home signal, 300 ft. back, and a distant signal 5,100 ft. back, both set against train No. 5; and the flagman of No. 79 also had gone back a short distance. The engineman and fireman of No. 5 were among the killed and the reason for the disregard of signals on the part of that train can only be conjectured. This collision was reported in the *Railway Age Gazette* of February 25 and March 3.

The trains in collision near Painesville, Ohio, on the 26th were eastbound freights. The leading train had been stopped for the purpose of taking water. Fifteen cars were wrecked and a fireman was killed. Two other trainmen were injured.

The trains in collision on the Lehigh Valley near Jersey City, N. J., on the 26th, about 4 a. m., were an eastbound locomotive hauling two cars, and a westbound locomotive drawing only a caboose. The eastbound engine had been struck by a tender in a train of the Pennsylvania, on an adjacent track (derailed), and so jarred that the engineman was knocked off and fell to the ground and was slightly injured. The engine, running without an engineman, ran unattended about 2 miles to the point of collision. Both

engines were badly damaged and the fireman of the westbound engine was fatally injured. Four other employees were less severely hurt. The fireman of the runaway engine had not discovered the absence of the engineman, his position, behind the Wootten firebox, being such that he was out of sight of the engineman's cab. Following are some of the details of this accident as narrated in the New York Times:

"John Berdert, fireman of Lehigh Valley locomotive 1666, was almost flung from the fire deck at 4:20 o'clock yesterday morning when the tender of a Pennsylvania locomotive, derailed and bumping over the ties, side wiped the Lehigh Valley engine as it was moving through the Oak Island yards in Newark. Berdert kept his feet, however, and, as the locomotive did not stop, he decided no damage had been done and went on with his firing, ignorant of the fact that John Kugler, his engineman, had been flung out of the cab, perched high up over the boiler, and many feet away from Berdert's fire deck.

"So the engine ran wild with Berdert throwing coal and keeping an eye on his steam gage, just as though Kugler had been at the throttle. Across the long bridge over Newark Bay the locomotive rushed with constantly increasing speed, for, in his fall, Kugler's hand had jerked the throttle open. Still Berdert suspected nothing, for it was early morning, the tracks were clear, and it was none of his business how fast Kugler ran.

"Through Jersey City, over the bridge spanning the tracks of the Central of New Jersey, pretty nearly two miles, the locomotive ran, and now it took a switch, lurching and swaying; shot onto the adjoining track with a jerk, righted itself and sped on again. Berdert, glancing up from his firing, saw a locomotive headlight bearing down on him, supposed it was on the adjoining track, and turned his glance again to the steam gage. Kugler seemed to be using it up as fast as he could make it.

"Then came the shrill blast of a whistle; another and another in a nearly continuous shriek until Berdert jumped to the edge of his deck and looked out, wondering what could be the matter. Almost upon him, and so close he had no time to jump, loomed the nose of Locomotive 725. There was a crash and the engines reared up against each other; there was the rending of steel, the whistle of escaping steam, and then Berdert was sent flying through the air. He landed in a bed of cinders, scratched, shaken up, and bruised, but otherwise unhurt. Before him was the wreck of his locomotive, mingled with that of 725. The caboose, the single car the latter locomotive had been hauling, was wrecked also and from the mass came the cries of injured men."

The trains in collision at Westminster, Mass., on the 27th were westbound freights. The conductor of the leading train, who was in the caboose, was fatally injured. The forward train, which was loaded to capacity, had stopped for water, and had again attained a speed of about 8 miles an hour when a time freight train, following, running at about 15 or 20 miles an hour, collided with its rear on an ascending grade of about 65 ft. per mile. The engineman of the second train admitted that he had fallen asleep. He ran past automatic block signals set against him.

The train derailed near Seward, Pa., on the second was eastbound express passenger No. 44. The train was running at about 60 to 65 miles an hour when 5 of its 8 cars were thrown off the rails at a point where the track was undergoing repairs. Forty-four passengers were very slightly injured. One cook, one porter and one brakeman were also injured. Track repairers, preparatory to taking out the rails of the track and putting larger rails in place of them, had drawn the spikes from two out of every three ties for a distance of about 1,000 ft. This weakening of the track is taken to have been the cause of the derailment and the foreman in charge of the work, a man of 13 years' experience, was suspended 15 days.

The train involved in the derailment near Vincennes, Ind., on the 7th was westbound passenger No. 43. It was moving at low speed, because of high water. The engine broke through the trestle bridge over the Wabash river. None of the cars were derailed. The engineman and fireman were drowned.

The train derailed near Milliken, W. Va., on the 7th was a southbound extra consisting of an engine and two cars. The engine was backing and the tender was overturned and one trainman injured. The derailment was due to weakened track caused by heavy rain.

The train derailed near Flagstaff, Ariz., on the evening of the 8th was westbound passenger No. 7 and the cause was a broken rail. Five passenger cars ran off the track but there were no serious injuries.

The train derailed near Vass, N. C., on the 8th was the northbound Florida Limited. Three cars were overturned, but the reports say that the passengers all escaped injury. The engineman was killed and the fireman injured. The cause of the derailment was a loose wheel of the tender.

The accident near Birdseye, Col., on the night of the 8th was caused by an avalanche of snow. The last car in the train was forced off the track and some distance down the mountain side and was finally overturned. Of the 5 passengers in the car only one is reported injured.

The train derailed at Bellwood, Va., on the 17th was northbound passenger No. 10. The engine and two passenger cars were overturned. Fourteen passengers were injured. The derailment was due to an arch bar of one of the trucks of the tender dropping.

The train derailed at Dante, Va., on the 17th was a northbound passenger, running about 35 miles an hour. The engine was overturned and the fireman was killed. The cause of the derailment was not determined.

The train derailed near Henrietta, Tex., on the 20th was northbound passenger No. 12. The engine was overturned and the engineman and a traveling engineer were killed. Three trainmen and one passenger were injured. The cause of the derailment was, probably, a defective tender truck and a bit of uneven track.

The train derailed at Little Falls, N. Y., on the 21st was an eastbound freight. The engine and two cars were damaged. A brakeman on the engine was killed. The cause of the derailment was the failure of a driving-wheel brake-hanger, which fell and displaced a switch rail.

The train derailed at Frankfort, Ind., on the 21st was the northbound "Hoosier Limited." The tender was the first vehicle to leave the track, and the engine, tender and baggage car were overturned; and four trainmen were injured. The cause of the derailment was not determined.

The train derailed at New Milford, Pa., on the 27th was a westbound freight. The engine and nine cars fell down a bank and the engineman and fireman were killed. The cause of the derailment was the failure of the engineman to heed a stop signal at a derailing switch.

The train derailed near Madisonville, Tenn., on the 29th was southbound passenger No. 31. The derailment occurred in a cut and 5 of the 6 cars in the train were left leaning against the side of the cut. One employee in the dining car, off duty, is the only person reported injured. The derailment was due to a broken rail.

*Electric Car Accidents.*—Of the half dozen accidents to cars on electric railways reported in the newspapers as occurring in the United States in the month of February, one only is reported as having been attended by fatal results; this was the case of a car struck by a locomotive at a street crossing in West Wheeling, Ohio, on the 8th. The motorman was killed and 10 persons were injurd. An inexperienced conductor closed a derailing switch and ordered his car to proceed over the crossing when a yard engine was approaching rapidly.

# Canadian Railways in the Eventful Year 1915

## Slump in Business Reaches Low Ebb But Net Earnings Fairly Well Maintained—Trend Now Upward

By J. L. Payne
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After full twenty years of uninterrupted prosperity the railways of Canada suffered a really serious setback in 1915. Gross earnings fell from $243,083,539 to $199,843,072; freight traffic from 101,393,989 to 87,204,838 tons. And this occurred in a year when operated mileage rose from 30,795 to 35,582 miles—an increase of 4,788 miles. All the carefully computed and gratifying averages which had been built up in railway statistics since 1895 went by the board. Yet the situation had in it features which are in the nature of compensations. One of these was the ability of the railways as a whole to so adjust their expenses as to practically offset the loss of gross receipts. That is to say, they were able to fairly maintain net earnings. Their experience in the early part of 1914 had given them warning of approaching trouble, and the results rather support the view that they proceeded to give an inspiring demonstration of administrative capacity. Almost anybody can show a fine balance when revenue is rolling in on a steadily rising scale; but the real test of mettle arises when month after month the revenue department reports shrinkage. Another outstanding item on the credit side off the account was the courageous refusal of Canadian railway managers to skimp outlay on roadbed and upkeep of equipment. They did not "save at the spigot and waste at the bung."

There is a strong temptation, in dealing with the large addition to mileage in 1915, to indulge in a little boasting. On this side of the line there exists a suspicion that our American friends would rather expect us to do a thing like that in a spirit of sheer neighborly emulation. The facts, however. speak for themselves. We added 4,788 miles of new line to operative mileage, and on June 30 last had nearly 2,000 miles definitely under construction. Omitting relatively unimportant increments, the additional mileage of the past year was distributed as follows:—Ontario, 1,448; British Columbia, 1,122; Quebec, 634; Alberta, 629; Manitoba, 422; Saskatchewan, 238, and New Brunswick, 123. It will be observed that just a little over half of the mileage was located west of Lake Superior. During recent years the West has had a considerably higher proportion of new mileage. Since 1910, for example, 10,851 miles of new line have been put in operation, and of that total nearly 67 per cent was assigned to the provinces west of Ontario. The need for additional transportation facilities has been most acutely felt in that section of the Dominion. The Canadian Northern, the Grand Trunk Pacific and the Canadian Pacific were the chief builders. There has not, in fact, been a single project of any magnitude launched during the past five or six years.

It would not accord with the chastened spirit of the Canadian people at this time to set off any fireworks by way of celebrating our recent gains in railway mileage. Before the outbreak of war there had come a lull in the persistent and urgent demands for railways. Up to the latter part of 1912, to parody Kitchener's famous announcement of a year ago, Canadians were shouting in unison; "More railways and still more railways!" With Europe in arms, and we ourselves among the belligerents, things began to turn topsy-turvy. The moratorium gave people time to think. Optimism grew feeble for need of nourishment. The man who had dared two years ago to call for a let-up on railway construction would have been treated as a traitor; but now the universal conviction might well be put in this form: "We are glad that our faith has led us into building the splendid transportation system which we have. It is ample for our present needs, and will serve us nobly in the great period of expansion which is expected to follow the declaration of peace; but we must have time to adjust ourselves to the very heavy responsibilities growing out of our relatively rapid progress." Nine people out of ten competent to express a sound judgment on the situation hold to some such view as that. The tenth, being somewhat of a pessimist, declares we have outbuilt, and will inevitably pay for our rashness.

Our railway obligations are heavy. Capitalization increased by $66,990,127 in 1915. This increment brought the total liability up to $1,875,810,888, of which 45 per cent was in stocks. In addition, $81,481,504 attached to lines under construction. That, however, is not all. The government had expended $152,802,746 on the eastern section of the new Transcontinental—which is now in operation from ocean to ocean—and in addition paid out during the year in cash aid to various lines $4,644,664. The subsidy account since 1910 has amounted to $40,000,000 in round figures. The federal government has also nearing completion a line 410 miles in length from a point on the Canadian Northern in Manitoba to Hudson's Bay, which will cost, without equipment, terminals or storage, $20,000,000. Then the guarantees of bonds, which has become the popular form of aid during recent years, stood on June 30 last at $410,000,000, An increment of $260,000,000 within four years shows the rising character of this indirect method of assisting railway building. Inasmuch as $221,000,000 of the total guarantees stands in the name of the provinces, there is a feeling that these endorsements have been carried pretty close to the limits of prudence. Nevertheless, all fixed charges have been met by the railways concerned and the rising tide of earnings, to which allusion will be made later, has quieted in a large measure the anxiety to which the conditions of last year gave rise. When things are on the down grade extreme views are sure to be asserted by the timid.

Gross earnings, as has been said, declined by $43,240,457 in 1915. This loss was made up of $11,864,268 in passenger service, $31,265,416 in freight service and $110,872 in other branches. Outside operations added $20,332,306 to gross, as compared with $23,882,142 in 1914. The effect of lowered gross earnings is shown in the following summary of averages:

| | 1914 | 1915 |
|---|---|---|
| Per mile of line | $7,894 | $5,616 |
| Per train mile | 2.253 | 2.144 |
| Freight—per ton | 1.614 | 1.520 |
| Per passenger | 1.328 | 1.083 |
| Per ton per mile—cent | .742 | .751 |
| Per passenger per mile—cents | 2.007 | 2.021 |

The immediate difference between gross earnings and operating expenses was $52,111,973, as against $64,108,280 for the preceding year. This net operating revenue was swollen by the results of outside operations and income from other sources to a final total of $72,855,887. Taxes cut off $3,179,352, leaving gross corporate income at $69,676,536. The sum for 1914 was $79,348,362. Deductions, however, were $40,635,445 in 1914, and only $28,553,412 in 1915. The difference was wholly in the somewhat indefinite item "other deductions," which were $12,530,334 in 1914, and

$277,144 in 1915. The result was that net corporate income for last year was $41,123,124, as against $38,712,917 for 1914. The disposal of this balance in 1914 and 1915 is shown in the following comparative statement:—

| | 1914 | 1915 |
|---|---|---|
| Dividends—common | $24,522,264 | $26,907,000 |
| Dividends—preferred | 12,717,857 | 12,443,279 |
| Additions and betterments | 185,945 | 187,914 |
| Reserves | 18,499 | 164,654 |

After these appropriations had been made, the remainder carried to profit and loss was $1,268,352 in 1914, and $1,420,277 in 1915. Of course, the kernel of this rather favorable situation in 1915 lies in that item of "other deductions"; but the showing was manifestly good apart from that particular adjustment.

Operating expenses in 1915 totalled $147,731,099, or 17.5 per cent less than for 1914. They were equal to 73.94 per cent of gross earnings—the highest ratio, with the exception of the years 1904 and 1905, since 1885. The outlay in 1915, compared with 1914, is shown in the following summary:—

| | 1914 | 1915 |
|---|---|---|
| Way and structures | $35,292,227 | $28,762,907 |
| Equipment | 36,375,331 | 28,156,261 |
| Traffic expenses | 6,546,602 | 5,853,632 |
| Transportation | 94,119,067 | 77,985,273 |
| General expenses | 6,642,032 | 6,973,026 |
| Total | $178,975,259 | $147,731,099 |

The ratio of each item in the foregoing comparison to the total is very nearly the same in 1914 and 1915. This fact was in mind when allusion was made to the expenditures on upkeep of roadbed and equipment. At this point an explanation would seem to be timely with respect to new mileage. Nearly all of the added mileage came upon an operating basis late in the statistical year. The immediate effect was to reduce all the averages per mile of line; but neither gross earnings nor operating expenses were materially increased. The new National Transcontinental is an illustration. The section from Moncton to Winnipeg, 1,805 miles in length, was taken over for operation by the Dominion Government; but very little traffic was moved up to June 30 last.

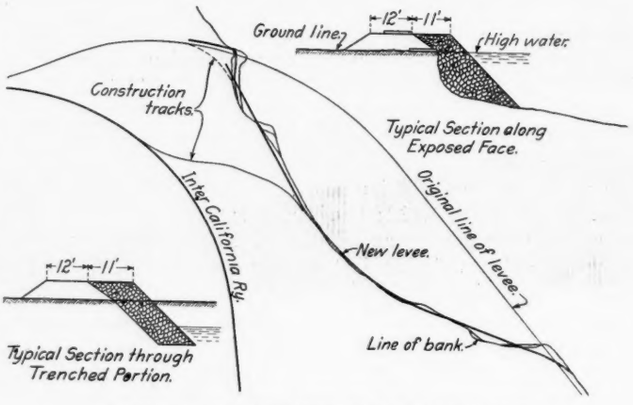
With this cursory sketch of railway operations in Canada for the year 1915, I pass on to deal with the situation as it has developed since June 30, 1915. If the slump which began in the early part of 1914 had continued down to the present moment, there would be cause for genuine anxiety. Happily, the down grade ended in August. In September earnings began to rise. They have been in the ascendant ever since. The Canadian Pacific has made the largest gains; but all the lines have shared in the betterment of traffic. This betterment was largely due to the unprecedented harvest of 1915, which emphasized the basic character of agriculture among the industries of the Dominion. The movement of large war orders came next as a stimulus to earnings. If business is maintained on the footing which was established at the close of the calendar year, gross earnings in 1916 will be restored close up to the level of 1914. Up to the end of February the gains were approximately $26,000,000. The railways are, however, pursuing a policy of caution. The period of uncertainty has not ended. The war persists. Taxation arising out of the war will take away some of the net earnings from railways. In this situation it is practically certain that not a dollar will be expended on capital account which can be held back, and that the utmost prudence will be exercised in relation to ordinary operating cost. The number of employees fell by 35,000 in 1915, although the scale of pay remained unaltered, and only urgent need will lead to the re-employment of those who were laid off. Financing is difficult, and the outlook on that score makes it probable that projects which require help from the money market will have to proceed slowly or suspend operations for a time.

There is much talk at the present time among the people of Canada about "preparedness"; but not of the character being discussed across the line. On this side the agitation relates to the expansion and prosperity which are expected to follow peace. A large immigration is anticipated. Be that as it may, it seems reasonably certain that we shall not see a resumption of the activity in railway building which was a salient feature of Canadian progress during the past decade. A period of pause in that regard is inevitable, pending the digestion of the facilities which we now have. It would be far from the truth to suggest that anything approaching depression has been produced in Canada by the war or the loss of railway traffic which grew out of the resulting disturbance; but the setback which has occurred, combined with the vast and indefinite responsibilities created by Canada's participation on a large scale in the European conflict, has displaced the buoyant feeling of past years and made prudence a supremely active virtue.

## CLOSING A BREAK IN THE COLORADO RIVER

Early in February of this year, the Colorado river broke through a levee along the line of the Inter-California railroad, a subsidiary of the Southern Pacific, extending from Yuma, Arizona, south into Mexico. The break occurred about five miles below the international border and threatened to flood the Imperial valley of Southern California. This serious result was averted by the prompt action of the Southern Pacific in meeting this emergency and closing the break in the levee.

This levee was constructed by the California Development Company several years ago to check the periodic overflow of the Colorado river. At the time of its construction it was several hundred feet back from the bank of the stream




**Locations and Sections of the New Levee**

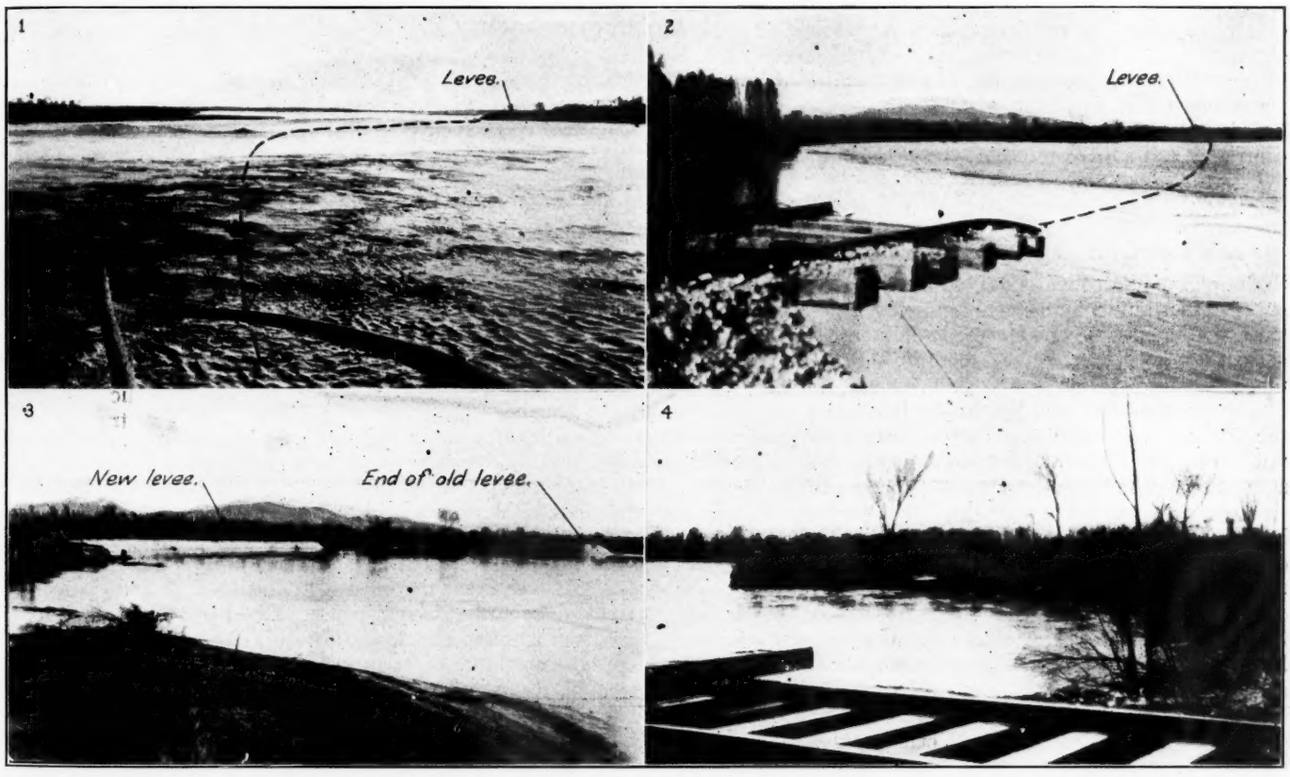
at the location of the recent break. Each year, however, this bank has eroded and the stream has approached closer to the levee. About one year ago the United States Government did considerable work in placing a blanket of rock on the face of this levee from about the elevation of the normal ground line to the top. This year the river, while at its unusually high stage, attacked the levee at the scour line about 12 feet below the bottom of the rock protection, undermined it and took out about 2,400 ft. of the levee, as well as a considerable area of higher ground behind it.

It was necessary to act quickly to prevent serious results and rather than wait for the United States Government to undertake protective measures, the Southern Pacific immediately organized a force under the direction of the engineering department, to close the break and to endeavor to eliminate future trouble. This has been done by the construction of about one-half mile of new levee back of the

break. This levee is of rock, faced with large stones and extends below the line of scour or as much as 15 ft. below the protection placed by the government forces one year previous. This rock facing is 11 ft. wide on top and is placed on the river side of the levee which is built 12 ft. wide on top with the top 5 ft. above high water mark and with side slopes of 1½ to 1.

To minimize the danger of excessive scouring, the new levee was built on a uniform curve. As shown on the drawing this required trenching in some places and filling out the bank in others. The trenching was done with a locomotive crane and a clam shell bucket, the trench being refilled with the rock protection, as shown in one of the accompanying sections.

It will be recalled that the Southern Pacific went to the aid of the United States Government after the latter had found itself unable to cope with similar conditions in the same vicinity in 1906, and was successful in turning the river back to its regular channel. Nearly $2,000,000 was spent by the road at this time at the request of the United States Government in controlling the Colorado river, none of which money has been repaid up to the present time, although a claim for reimbursement has been before Congress for some time.




**1—View of the Break in the Levee from the Upper End, Showing the Original Line of the Levee in Ink. 2—View of the Break from the Lower End. 3—View of the New Levee Under Construction from Near the Lower End of the Break. 4—The Erosion Back of the Upper End of the Levee.**

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American Shipbuilding.—At the first of February, this year, there were 230 steel mercantile vessels building, or under contract to be built, in private American shipyards. The geographical distribution of the new tonnage under construction may be given as follows:—Delaware river, 65 ships, 291,969 tons; Chesapeake Bay, 43 ships, 421,406 tons; Pacific coast, 31 ships, 173,178 tons; the Great Lakes and sundry rivers, 64 ships, 141,163 tons; New England, 19 ships, 68,078 tons; and other districts, 8 ships, 4,577 tons.

## THE CHANGE IN THE ATTITUDE OF THE PRESS*

By Daniel Willard
President of the Baltimore & Ohio

It is not my purpose to review at length the so-called "Five Per Cent Rate Case" of the eastern railroads, or other similar movements preceding it, but in order to make clear what I have in mind, I must refer at least briefly to certain matters in that connection. The eastern carriers made application to the Interstate Commerce Commission in 1910 for permission to advance certain of their freight rates, which petition, after a full hearing, was denied.

Two years later, in 1912, the same railroads again made application to the commission for permission to advance all freight rates approximately five per cent. After a most thorough investigation extending over many months, the commission late in 1914 reached its decision, but this time largely in favor of the railroads. Coincident with the commission's change of view, as shown by the two decisions referred to, another important change of viewpoint was taking place, and it is of that particular change that I desire to speak.

It so happened that I was asked to serve as chairman of a committee of presidents in connection with the five per cent case, and I took some pains to investigate the attitude of the press towards the railroads—using the word press in its broadest sense. I found that in 1910 when the first eastern rate case was tried and lost, a large majority of all the papers in the United States were opposed to granting the increase then asked for. Two years later when the five per cent movement was started, it was clear that the attitude of the press

*From an address delivered before the American Newspaper Publishers' Association, April 27, in New York.

had changed materially. In 1912, for instance, it appeared that upwards of 40 per cent of the papers were in favor of a more considerate treatment of the railroads, although a considerable majority still seemed to doubt that any necessity existed for additional revenues, such at least as would justify higher rates. During the progress of the five per cent case which continued for upwards of two years, special effort was made to place the whole matter clearly before the public. Railroad officers appeared in person before commercial bodies in all of the more important business centers and sought opportunity to explain fully the situation. The press also during the progress of the case apparently kept in touch with the development of the question and did not fail to detect the changing attitude of the public mind, and before the matter was finally disposed of, it had come about that more than 95 per cent of all of the leading papers and publications in the United States were distinctly in favor of granting the increase which the railroads had asked for, or at least were in favor of a more liberal policy than had been followed in the past —not, it should be understood, because of any special interest in the railroads themselves, but clearly because such a policy was deemed best in the larger public interest.

I do not mean to suggest that the commission was actually controlled or unduly influenced in its last decision, either by the attitude of the press or of the public, but I do mean to say that the same conditions which caused the press and the people as a whole to assume a more liberal attitude towards the railroads, may have operated in a similar manner upon the minds of the commission. It would be unreasonable to suppose that any body of men occupying a position of public trust would be indifferent to an enlightened public opinion concerning a matter before them of great public importance.

The press of this country, by its intelligent discussion of the five per cent case and by its correct interpretation of public opinion concerning the whole general subject, rendered a great service to the railroads and to the country at large.

The most encouraging thing that has happened during the last five years from the viewpoint of the railroads is the change of public opinion just referred to, and so clearly interpreted by the press, though not as yet, I regret to say, so clearly reflected in the attitude of those who make our laws, but even there I think conditions are more hopeful than they have been at any time within my own personal knowledge and recollection.

I have already used so much time in talking of this particular phase of my subject that I can speak only briefly concerning the needs of the future. Those who manage the railroads today understand clearly that it is the mandate of the people that the railroads, although owing their existence to private capital, shall be operated as semi-public institutions subject in all matters to public regulation and control. The carriers also realize that if such a system of economic policy as I have just indicated cannot be worked out successfully, the only alternative will be government ownership with political control, instead of ownership by the public individually, as now, with government control. Personally, I feel confident that the present system can be made a success—that it has not been a complete success in the past is a matter of common knowledge.

The defects, I might almost say the one defect, of the present system, are becoming better understood. No one would contend or expect that 48 different regulating bodies, with interests sometimes at variance, could satisfactorily and efficiently supervise and regulate the same subject at the same time, although that is exactly what we are trying to do under our dual system of federal and state regulation of railroads. It no doubt seemed necessary in the past for the individual states, or some of them to act in fields where the federal government should have acted, but had neglected to do so, but as we have gradually grown and become transformed from a loose confederacy of states into one great nation, the necessity for federal instead of state control has become more and more apparent concerning many matters of nation-wide importance —such necessity has been reflected in a federal postal system, the national bank act, national bankruptcy act, and more recently, the federal reserve act, federal trade commission, etc. Gradually, consistently and naturally, as I view it, the change in railroad regulation from state to federal is also taking place, and the thing most desired is that the complete change shall be accomplished in as brief a time as practicable, consistent with orderly transition. I believe few if any radical changes in the laws will be necessary and such changes as may be made will be rather changes of detail than of principle. I think a careful survey of the matter will develop that we have already gone a long way toward federal regulation of railroads—much further, in fact, than is generally supposed, without being fully aware of the change, and it now requires little more than that the actual status should be fixed by Congress. Certain features of public regulation as applied to the carriers will undoubtedly, and properly so, remain with the state, but generally regulation of railroads must be left with the federal government, if we are to have a unified and effective federal system of transportation—and only such a system will satisfy the needs of our commerce and enable our nation to properly fulfill its destiny. That, to my mind, is one of the most important questions concerning not only the railroads but the entire body politic.

There is one other very important matter in connection with railroad operation—but not as yet under government regulation—which I think I should refer to briefly at this time—I refer to the railroad labor problem. At the present time it is a matter of common knowledge that the men who operate the trains and engines on all the railroads in the United States have demanded changed working conditions and rates of pay, which, if granted, will increase the total cost of operation, as estimated by the carriers, many millions of dollars per year, and, of course, any increase in the cost of transportation, due to whatever cause, must in the end be paid by those who use the roads—the carriers have no other source of revenue.

It seems to me that inasmuch as the public in the last analysis must bear the burden, it should have and claim the right to be fully advised concerning all of the facts before any step is taken which would result either in increasing the cost of transportation or in interfering with the proper operation of trains. This nation-wide movement is the logical culmination of a succession of similar but smaller movements which have taken place during the last 10 years, and because of its extent and character it must be met and considered from a national standpoint.

Certainly the men who operate the trains and engines should be a selected class and they should be well paid and given good and suitable working conditions, and if the carriers are not already paying such wages and providing such conditions, they should be required in the public interest to do so, and if it should then appear that upon the existing basis of rates and fares the revenues of the carriers were not sufficient to yield a fair return upon the value of the properties devoted to the public use, after paying the increased wages, then such increase of rates should be permitted as would fairly meet the situation. On the other hand, I can think of no sound nor sufficient reason for imposing an additional burden upon the public in the way of increased rates if after a full and careful inquiry into the whole matter, by a competent body selected for that purpose, it should be found that the wages and working conditions of the particular men involved in this question are now on a proper and equitable and even liberal basis. There should be the fullest possible publicity concerning the whole matter as a basis for correct public opinion. It has been well said that, "Public opinion and patience are the best possible agents for successfully solving industrial, social and economic problems."

# The Revised Standard Code—Forms of Orders*

## A Study of the Forty-One Forms of Train Orders; Some of Them Dissected. Proposed Simplifications.

By Harry W. Forman

FOURTH ARTICLE

Form A.—I see no objection to the use of engine numbers to assist in the identification of trains, but there is some risk in so doing, if the numbers are not kept up. Train indicators, displayed on engines, are an important element in facilitating train movement on single tracks.

A decision is necessary as to how to arrange engine numbers in orders. Shall orders read, "First and Second 1 Engs 798 and 799," or, "First 1 Eng 798 and Second 1 Eng 799"? The latter will of course make orders much longer.

Despatchers should be allowed voice in the matter of selecting suitable wording for train orders, the same as they should be permitted to suggest figures for time of trains at intermediate stations when new time-tables are made, so that trains may not have to wait for time unnecessarily, or worry the life out of despatchers by their frequent requests for permission to run ahead of time.

The only inflexible condition as to the wording of orders that should be imposed on despatchers is that they must make use of the same form or expression, for the same movement, at all times. Of course, prescribed forms must be used when applicable.

It often happens that a train order containing a number of meeting points can be worded more clearly by making use of the words, "Hold main track." Do not forbid the use of this expression. To be compelled always to direct that certain trains take siding hampers the despatcher unnecessarily.

I would add a fifth example under Form 1, making it 1a, and reading, "Extra 652 North gets this order and will hold main track and meet Extra 231 South at B." I am assuming that southbound trains are superior by direction. Do not permit an order to appear less plain, or awkardly worded, because of aversion to the little word "will."

Form B.—Since the train rule committee of the A. R. A. has decided that, should extra 95 west be directed to run ahead of No. 3 (from) B until overtaken and that if No. 3 consists of sections, extra 95 must, unless given further orders, wait at the station where overtaken by the first section until all have passed it, it would seem desirable to provide a form that will enable the extra to continue moving, ahead of any of the sections, allowing each to pass it when overtaken. This can be accomplished by adding a new form, reading, "Extra 95 West run ahead of No 3 B to Z unless overtaken." It will not be contended that the extra has not the right to run to Z ahead of any or all sections of No. 3 under this form. I would put this in as Example 4a and use it to the exclusion of Example 4 when a schedule consists of sections and it is intended that the men in charge of extra 95 shall understand that they may run to Z ahead of any section of No. 3.

Proposed form 4a is a challenge, based on the principle to be found in Rule 218. It rests with all to endorse or reject this view as may appear to them to be for the best. As I have added two words to a code form, it is not likely that the committee would care to recognize this form and rule upon it. Must it be admitted that we have a principle, as important as this, that can be applied only as between opposing trains? Are we not to recognize the need sometimes of having to use it also as between trains moving in the same direction?

If it be decided that the suggested form does not differ in principle from code example 4, further effort to provide a form which will enable an inferior train to continue ahead of sections of a superior train, when sections are not specified, allowing each to pass when overtaken, would seem to be useless. Since it has been ruled that when No. 3 is given right over No. 2, G to X, and happens to find the first section of No. 2 at some intermediate station, it (No. 3) may continue to X against the second section of No. 2; then, with seemingly unanswerable logic it may be contended that when extra 594 East is given an order to run ahead of No. 6, M to B, and the words "Unless Overtaken" are added, such order is not fulfilled when 594 is passed by the first section of No. 6 at, say K; that this extra may go on to B ahead of second or any following sections; that the two situations are analogous.

A study of all examples of Form B is very convincing of the wisdom of specifying sections. If it is not done, there may always be misunderstandings or serious delay at non-communicating points. Why should we continue to complicate the American train despatching system by arbitrarily compelling despatchers to use, and trainmen to understand, the principle of Rule 218? Why continue the unnatural practice of saying "No. 1" when you mean several trains bearing that number?

Form E, Example 4.—While, ordinarily, time must be duplicated in figures if safety is the chief aim, to do so in making use of this form will entail a great deal of extra work and consume considerable time. I fear that busy despatchers cannot find the time under present conditions. It seems to be the intention of the code that the middle order shall be used in connection with "wait" orders, the same as with orders fixing meeting points positively; but, in the case of Example 4, when used in lengthy "schedule" form, to do so may prove too burdensome. I would not oppose stating such times in figures only. I do not deem it necessary to address such orders to operators at all stations where a scheduled train is ordered to wait. Each book maker, however, must decide this; much depends on the present custom on the road.

Form F.—Some companies do not require despatchers to issue train orders creating sections at initial stations, having provided a form to be filled out by the operator. This is convenient and the practice often has prevented delay at some distant terminal when communication with the despatcher's office was interrupted by storm. Rule 95a should be used to explain this.

Example 8.—If an order is also addressed to the several following sections of second number 1, reading, "Second 1 take down signals at D," it is my understanding that such order withdraws from that schedule all sections following second No. 1. This seems proper, since sections are created in practically the same way. See Example 3.

Example 9.—Often it is necessary to run, say, the third section, past the others, making it the first section from a given point. Should sections be created by train order, the order authorizing them may be annulled; if created by operators (as at terminals) former signal instructions should be annulled. To enable despatchers to provide for this movement, an example, to be made 9a, reading somewhat like the following, should be authorized and printed, with a proper explana-

*This is the fourth and final article in the series by Mr. Forman. Previous articles appeared in the *Railway Age Gazette* of January 14, February 18, and March 31.

tion: "Order No 12 (or, former signal instructions) is annulled. Engs 99 20 and 25 run as First Second and Third 1 H to Z. Eng 99 pass Engs 20 and 25." There may be times when the despatcher will have to reissue other train orders which it will be necessary for the newly created trains to have, because the orders have not been addressed to all sections concerned. He must see that there is no misunderstanding as to this. When in doubt, or the circumstances require it, he may add to the order, "Respect Orders 8 and 9."

Form G, Example 2.—If the order-signal at F be at stop, extra 99 must report at that office and be properly cleared before starting on the return trip. If not at stop, a clearance card is unnecessary.

A crew may find it necessary to take their engine and return to some point in the rear of their train to look for something lost, etc., while it may not be essential that they go to any given point, as is provided in Example 2. In such a case an order to work extra should be given.

Should No. 1 be directed to meet an extra at a noncommunicating station and, if, for some reason, it should then become necessary to put on the extra an engine having a different number from that mentioned in the order, this need not cause delay. Annul the original order where it is awaiting the extra and issue another, reading, "Eng 799 run extra A to Z. No. 1 meet Extra 799 East instead of Extra 798 East at C." Address this order to No. 1 at C and send in care of the conductor of extra 799. The above illustrates the principle. There are different ways of applying it.

I would add another example under Form G, making it Example 2a, reading, "Eng 99 has until 9 50 a m to run extra A to F." This order may also, of course, provide for the return trip, and may give right over all, or certain trains.

Form H.—If it is desired to relieve the work extra from having to flag out to its work, add to Example 1 "and has right over eastward trains until 8 30 a m."

When a work extra is created at a station where there is no train register, add to Example 1, "At 6 45 a m all trains (or, all trains except ——) have passed (or, have arrived and departed from) D."

Example 2.—Should it be desired to relieve a work extra from protecting against other extras until some time later in the day, the words, "Not protecting against eastward extra trains until 11 30 a m," may be made use of.

Example 4.—Extra 76 east must not enter the working limits before 2:10 p. m., even though work extra 292 may be found on the siding at D or E, unless informed by the conductor of the work extra that the track is clear and, so far as his train is concerned, it is safe and his permission is given to do so. Seeing the engine and markers of a work extra is not all that is required in a case of this kind; it must be known that the track is clear of all of the work train's cars, as it owns the track, so to speak, until 2:10 p. m.

Example 5.—Should an order be addressed to engine 292 and No. 55, instructing this engine to work extra from 6:45 a. m. until 5:45 p. m. between B and D and meet No. 55 at C, No. 55 must continue to wait for 292, even though it should fail to arrive at C by 5:45 p. m., unless the meeting order in annulled or superseded. This, in substance, is a ruling of the train rule committee of the A. R. A. No doubt the committee feared that some despatcher might, even in this enlightened age, extend the time in the order to work extra before the original order had expired, both he and the crew of the work extra being under the impression that by so doing the provision for meeting No. 55 could thereby also be kept in effect. Prior to such decision, there were many who were firm in the belief that No. 55 could disregard the work extra after 5:45 p. m., as the work extra most certainly would pay no further attention to No. 55 after it became more than twelve hours late.

Notwithstanding this decision, my advice to despatchers is to not extend the time of working orders under such circumstances. I would entirely avoid this risk by directing No. 55 to wait at C until 5:45 p. m.; or, in the event of the meeting order being used, if it be found that the work extra cannot make C by 5:45 p. m., I would annul the former order and provide a new one, addressing it to both trains. This decision graphically illustrates the danger there may be in not adhering to principles. Having been taught that all orders relating to a train become void when such train ceases to exist, is not there a chance for the crew of No. 55 to look upon the order to meet the work extra as being void when the time that the work extra may work has expired?

Example 6.—The last part of the third paragraph reads, "if the order indicates that the work extra is protecting against other trains, they will run expecting to find the work extra protecting itself." It will be noticed that this paragraph deals exclusively with extra trains; therefore, instead of reading, "against other trains," it should read, "against extra trains." For instance, an order indicating that the work extra was protecting against second and third class trains would not be authority for an extra train to enter the limits without first sending forward a flagman. The extra might proceed on the supposition that, because it was running on the time of a regular second class or third class train, it would be warranted in assuming that protection was unnecessary. But the work extra may hold another order, giving it authority to run against the regular train whose precedence the extra was wrongfully making use of. This slight change should be made; or at all events instruct fully concerning it. Regular trains are dealt with in Example 5.

In the next paragraph the words, "to be changed as the progress of the work may require," are of no particular value.

Form J.—It would be safer to indicate the station at which a train is held, thus: "Hold No 2 at Murray."

The paragraph reading, "These orders will be addressed to the operator and acknowledged in the usual manner, etc," has been interpreted by many to mean that Form 31 must be used both to hold and to release a train. It is best that Form 31 be used to hold the trains, in order that the name of the operator pledging himself to perform this service may be recorded. To use this form to release trains thus held would not entail much extra work, though I see no objection to the use of Form 19 for the latter purpose. It would appear that conductors are not expected to sign such orders, as they are addressed only to the operator, the same as the "middle order," and which is not signed by anyone except himself. But many operators contend that signatures of conductors should be secured, for the information of operators who may relieve them while such holding orders are in effect.

Being addressed only to the operator, the releasing order should read, "No 2 may go," not, "You may go," as so many use it.

Form K.—I see no objection to placing a time limit on any order, as recommended by the train despatchers, to enable the 16-hour law to be complied with. Examples similar to the following seem to be necessary and should not be opposed: "No. 1 of February 29 is annulled after 11:30 p. m."

Form L.—If a train receives an order, reading, "Order No 10 is annulled," and has no such order in its possession, the conductor must require the despatcher to provide him with copies. The reason for this is that he may hold an order which the despatcher desires to make void, but which, through error in transmission, may bear a wrong number.

Clearance Card, Form A.—To avoid any uneasiness on the part of conductors and enginemen, an operator may properly specify the kind of orders he has for a train, thus: "I have 1 Bulletin, Slow, Track, or Notice order for your train." Some companies use a clearance card which shows whether the orders delivered are 19 or 31, and require that the numbers of such orders be indicated. To mention each order by its number has its advantages, as, for example, when sending

an order in care of a conductor for a train at some noncommunicating point.

As every one knows that code forms 19 and 31 do not provide enough space for the address, it is surprising that this defect was not remedied in this revision. There should be two lines for the addresses, running entirely across the blank, so that an order can be plainly addressed to six or eight trains, and also to enable an order to be addressed to another train at some noncommunicating station in care of the conductor who is to make the delivery. I have known of many failures in the delivery of orders, for no other reason than that the addresses were closely written or indistinct; and would not willingly use these forms in their present shape.

## COMPETITIVE BIDDING AND INTERLOCKING DIRECTORATES

The following is the substance of the tentative draft of rules governing competitive bidding required under Section 10 of the Act approved October 15, 1914, commonly known as "The Clayton Anti-Trust Act," and the reports in connection therewith required to be made to the Interstate Commerce Commission on which the commission will hold a hearing in Washington, May 16.

When any common carrier engaged in commerce as defined in section 1 of the act desires to have any dealings in securities, supplies, or other articles of commerce, or to make or have any contracts for construction or maintenance of any kind to the amount of more than $50,000 in the aggregate in any one calendar year with another corporation, firm, partnership, or association, when the said common carrier shall have upon its board of directors, or as its president, manager, or as its purchasing or selling officer, or agent in the particular transaction, any person who is at the same time a director, manager, or purchasing or selling officer of, or who has any substantial interest in such other corporation, firm, partnership, or association, such common carrier shall, with respect to the transactions which bring the aggregate for the said year to more than $50,000, prepare specifications, form of proposals, and contract form, setting forth clearly and in detail the terms, times and conditions of the transactions proposed, when and where delivery or performance is to be made, the characteristics and amount of the securities, supplies, or other articles to be dealt in, specifying whether by purchase, sale, loan, hypothecation, or in any other way, similar or dissimilar, and of the work of construction or maintenance to be performed, and when and how payment therefor is to be made, and shall publish in at least two newspapers of general circulation, one published in the city of Chicago, and one published in the city or town where the principal operating office of the common carrier is maintained, and if practicable in at least two newspapers of general circulation published in the vicinity where the said contract is to be executed, and, where the specifications include materials or supplies, in at least one trade paper of the industry affected, notices describing in general terms the proposed contract, giving its serial number, and stating where and upon what conditions copies of the said specifications, proposals and draft contract may be procured, the manner in which bids thereon shall be submitted, and where and when and by whom the bids submitted shall be opened. The said notices shall be first published at least ten days prior to the date so fixed for opening bids and thereafter daily or weekly, as the case may be, to and including the day prior to the date so fixed. If the common carrier reserves the right to reject any and all bids, that fact shall be plainly stated in the published notice.

Each bid submitted shall be on the form of proposal so prepared, with all blanks filled, shall be attached to the specifications and form of contract proposed, and shall be accompanied by tender of bond with sufficient sureties conditioned upon the performance of the proposed contract in such reasonable amount as may have been designated in the notice published as aforesaid. Such bid shall be enclosed with the accompanying papers in a plain envelope securely sealed, bearing no indication of the name of the bidder or the amount of the bid, marked "Bid under proposed contract No. ———," and addressed to the officer of the common carrier designated for that purpose in the published notice.

All bids shall be opened together at the time and place and by the person or persons designated therefor in the notice so published. Each bidder may attend in person or by duly authorized representative at the opening, and shall be afforded opportunity to examine each bid.

The bids shall forthwith be tabulated in conformity with the form of proposal prepared for use in the competitive bidding and a copy of such tabulation shall be promptly furnished to any bidder or authorized representative thereof upon application therefor.

Each such common carrier having any such dealings or having or making any such contracts for construction or maintenance as are within the scope of section 10 of the Clayton antitrust act, shall within thirty days after acceptance of any bid therefore file with the Interstate Commerce Commission a full and detailed statement of the transaction showing (a) the manner of the competitive bidding; (b) who were the bidders, and (c) the names and addresses of the directors and officers of the corporations, and the members of the firm or partnership bidding.

Each common carrier engaged in commerce as defined in Section 1 of the Clayton act shall further report annually, within thirty days after the close of the calendar year, a statement of all dealings with and purchases from each such other corporation, firm, partnership, or association, described in Section 10, regardless of the amount of such transactions and regardless of whether competitive bidding is required under the act. The statement shall give the date and amount of each transaction or purchase and the name of the corporation, firm, partnership, or association involved, and shall be made in accordance with forms prescribed by the Interstate Commerce Commission, on paper of durable quality, fit for permanent record. The statement shall be certified by the president or other chief officer of the carrier to be complete and correct to the best of his knowledge and belief.

## MAGNETIC EXAMINATIONS OF STEEL

The Bureau of Standards, Washington, D. C., has issued Scientific Paper No. 272 entitled "Corelation of the Magnetic and Mechanical Properties of Steel," by Charles W. Burrows, which reviews the work being done to determine the possibilities of using the magnetic properties of steel as indices of the mechanical properties, such as hardness, toughness, elasticity, tensile strength and resistance to repeated stresses.

In connection with steel rails an investigation is being carried on to ascertain the feasibility of discovering flaws, hard spots, etc. These tests are executed by subjecting a section of rail to magnetizing solenoids and then exploring the length of the rail for variations in magnetic induction by means of a test coil connected with a galvanometer and recording apparatus. In order to approximate the effect of a transverse fissure a narrow slot was cut in a rail and then filled with high permeability transformer iron. The magnetic effect of this saw slot was clearly indicated on the record obtained.

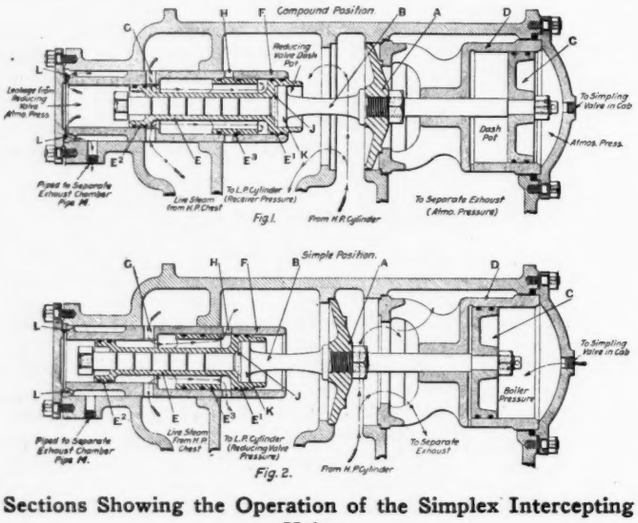
Magnetic tests at the present time are possibilities only. Much experimentation is necessary before much practical importance may be attached to them. The most encouraging field for this line of investigation will be with relatively long objects of comparatively uniform cross sections, such as rails,

rims, cables, etc. Relatively long objects whose cross sections change gradually from section to section present comparatively little difficulty, but with long objects of irregular section or short thick masses the practicability of the magnetic investigations is much more remote.

## INTERCEPTING VALVE FOR MALLET LOCOMOTIVES

The details and method of operation of an intercepting valve which has recently been developed by the Economy Devices Corporation, New York, for use on Mallet compound locomotives, are shown in the drawings. It is known as the Simplex intercepting valve and is shown as applied to cylinders cast integral with the half saddles. It is enclosed in a separate lagged and jacketed casing in front of the cylinders, with separate connections to each. This arrangement permits the use of the same pattern for both right and left cylinders, the openings in the rear walls being closed by special caps as shown in one of the illustrations. It may readily be adapted for use with cylinders which are attached to a separate saddle casting, it being possible in this case to provide the necessary passages and chambers for the operation of the valve inside the saddle itself.

By referring to the drawing showing the operating positions of the valve it will be seen that the casing is divided into four chambers communicating respectively from left to right with the live steam chamber of the high pressure steam chest, the receiver pipe, the exhaust passages of the high pressure cylinders and a separate exhaust pipe leading to a removable annular nozzle surrounding the main exhaust nozzle. The exhaust steam from the high pressure cylinders

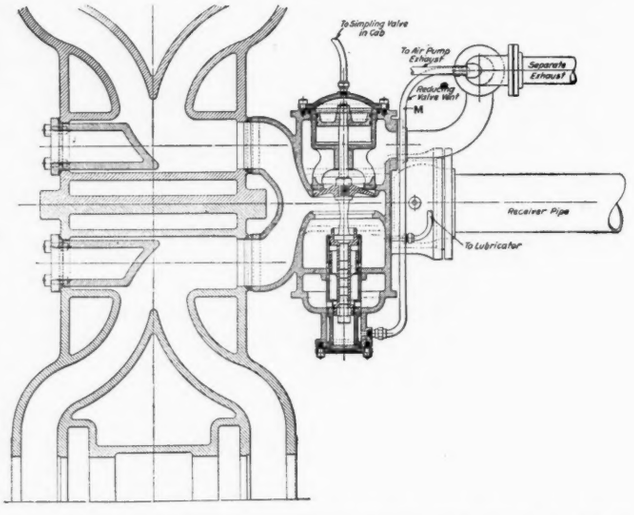



**Sections Showing the Operation of the Simplex Intercepting Valve**

is controlled by the main valve $A$ which causes it to flow into the receiver chamber and thence to the low pressure cylinders when the engine is working compound and through the separate exhaust chamber to the atmosphere when working simple. The intercepting valve stem on which this valve is secured is extended to the right, the end carrying a piston $C$ operating in the cylinder $D$. Live steam is admitted to the outer face of the piston by placing the operating valve in the cab in the position marked "Simple," thus forcing the operating parts into the position shown in Fig. 2. The inner end of the cylinder serves as a dash pot and prevents shock in the movement of the valve.

At the left end of the valve stem is a differential piston valve $E$ which controls the admission of live steam to the low pressure cylinders. This valve has a movement of one-half inch on the stem, the latter having a traverse of three inches. It works in a bushing through which are ports communicating with the live steam and receiver chambers, port $G$ admitting live steam to the annular space between the two pistons and port $H$ admitting live steam to the low pressure cylinders under control of the reducing valve.

Referring to Fig. 2, showing the intercepting value in simple position, it will be seen that until pressure is built up in the receiver pipe the reducing valve will occupy the position shown, owing to the greater area of piston $E^1$ as compared with piston $E^2$. As soon as the predetermined pressure has been built up in the receiver pipe, however, it reacts on the outer end of the piston $E^1$, causing the valve to move to the left on the stem and closing port $H$. The width of the opening through this port will thus be automatically regu-




**The Location of the Intercepting Valve and the Method of Connecting It to the Cylinders**

lated to meet the requirements of the low pressure cylinders at a constant receiver pipe pressure.

When the pressure is released from cylinder $D$ the tendency of the reducing valve to move to the right is utilized to move the main valve from its simple to its compound position. At the outset this movement is aided by the action of the receiver pipe pressure against the piston $A$. When the valve moves from simple to compound position the interminate piston $E^3$ moves over the port $H$ and closes it as shown in Fig. 1.

The control of the power exerted by the high pressure cylinder when working simple is effected by changing the size of the annular exhaust nozzle. The small end of the reducing valve is vented to the atmosphere through the pipe $M$ which leads into the high-pressure exhaust pipe. The smaller the exhaust nozzle the greater the back pressure acting on the high pressure piston; this in turn, acting through the pipe $M$ against the small reducing valve piston, increases the receiver pipe pressure and adds power to the low pressure cylinder. Should the high pressure engine slip when working simple, the resulting increase in back pressure will produce the same effect, temporarily increasing the pressure admitted to the low pressure cylinders and thereby tending to maintain a uniform total drawbar pull.

Care has been taken in designing this valve to facilitate removing it for inspection or repairs. The entire mechanism including the operating cylinder $D$ may be removed by taking off the cylinder head, the arrangement being such that the work may be done from the ground without going between the locomotive frames. This work may be done with no other tools than a monkey wrench.

# General News Department

The Chicago & Alton has given an increase in wages of about five per cent to 1,200 clerks in various departments of the railroad.

A fire on the pier of the Delaware, Lackawanna & Western at Twenty-eighth street and the North River, New York City, May 3, destroyed freight of an estimated value of $100,000.

The Gulf & Interstate Railway resumed the operation of regular trains on April 30 between Galveston, Tex., and Beaumont. The line had been out of business since the great storm of August last.

Charles H. Mansfield, engineman of train No. 25, involved in the rear collision at Bradford, R. I., April 17, when five passengers were killed, was indicted for manslaughter in the court at Kingston, R. I., April 27.

The Association of Railroad Chief Surgeons held its annual meeting in Chicago on May 1. The following officers were elected for the ensuing year: President, Dr. O. Le Seuer, chief surgeon of the Michigan Central; vice-president, D. Z. Dunott, chief surgeon of the Western Maryland; secretary-treasurer, Dr. Louis J. Mitchell, Chicago.

The Woodworth & Louisiana Central Railway Company, of Louisiana, has been authorized by the railroad commission of that state to abandon that portion of its line extending west from Woodworth to Valentine, 17 miles. There is only one shipper of any consequence on this line, a lumber company, and this shipper consents to the abandonment. The line is narrow gage. The remaining portion of this company's line, 6 miles long, between Lamourie and Woodworth, is standard gage.

Telegraphers, signal men and signal repair men are threatening to strike all along the New York Central from New York to Chicago. H. B. Perham, head of the Order of Railroad Telegraphers, says that these three classes are all united now in a single union, and recognition of this union is one of the chief demands being made on the company; but an increase of pay is also asked for. The company has employed considerable numbers of "strike-breakers" who have been assembled at principal points.

The Pennsylvania Railroad announces that the hotel which is to be built for it opposite the company's station in Seventh avenue, New York City, is to be opened in 1917; and that it has been leased for 21 years to Franklin J. Matchette, of Milwaukee, Wis. The hotel, when opened, will have 1,000 bedrooms; and the eastern section of the building, three stories in height, is to be so designed that 1,200 additional rooms can be built when needed. The architects of the hotel are Messrs. McKim, Mead & White, the same who designed the Pennsylvania station.

The city of St. John, N. B., has adopted as standard time that of the forty-fifth meridian, one hour faster than that of the sixtieth meridian, which heretofore has been used. This change is made at this time with a view to making it easy for everybody to adjust his day's work so as to get into it the maximum number of hours of daylight. The Canadian Pacific, which runs to St. John, uses, at present, Eastern Standard time, hitherto one hour slower than the time used in the city; and now, unless it changes, the road's clocks will be two hours slower than those showing city time.

The main line of the Chicago, Burlington & Quincy between Chicago and Minneapolis was put out of service for two days last week by a washout of its embankment at East Winona, Wis., which was carried away by a rise of the Mississippi River. The Burlington embankment had been the only protection of the district lying east of its tracks since the rise of the river began nearly a month ago. The washout of approximately 300 ft. of the embankment inundated a large district of farm lands. Trains were detoured over the tracks of the Chicago, Milwaukee & St. Paul until a 15-bent trestle could be built.

The Board of Arbitration appointed by Secretary of Labor Wilson to adjust the grievances of men employed on the United States government railroad in Alaska, who went on a strike in February for higher pay, has rendered a partial report, fixing the pay of common laborers at 42 cents an hour, instead of 35 to 37½, and of skilled labor, such as machinists and carpenters, at 70 cents an hour, instead of 50 to 55 cents. The Federal Laborers' Union at Anchorage, which caused the strike, had demanded a minimum of 50 cents an hour for common laborers, and a proportionate increase for skilled labor. A press despatch of May 1 says that the strikers have gone back to work.

In connection with the collision at South Cheney, Wash., February 20, reported in another column of this issue, the Travelers Insurance Company of Hartford, Conn., paid insurance on three lives to the aggregate amount of $34,000 on policies for which the company had collected only $151. One of these passengers had bought an insurance ticket for a single day, paying 25 cents; and his family became entitled to $5,000, the policy providing that in accidents of this kind double indemnity should be paid. Another passenger had paid 75 cents, and the indemnity was the same. The third passenger had bought a policy three years ago for $10,000, and had paid $150. Each succeeding year the principal sum of this policy was increased by $1,000, so that at the time of the policy-holder's death the principal sum was $12,000; and the doubling of the indemnity, because of the character of the accident, made this $24,000.

### Aero Records

At Newport News, Va., April 30, Theodore C. MacAuley, using a flying boat known as "H-7," rose to an altitude of 1,000 ft., carrying six passengers; he remained in the air one hour and ten minutes, and traveled at the rate of 88 miles an hour. On the same day Victor Carlstrom, flying in a twin-motor military biplane, and carrying one passenger, is said to have risen to a height of 16,500 ft.

### International Railway Fuel Association

The annual convention of the International Railway Fuel Association is to be held at the Hotel Sherman, Chicago, May 15-18. S. M. Felton, president of the Chicago Great Western, will make the opening address on the Railroad Fuel Problem, Past and Present. Samuel O. Dunn, editor of the *Railway Age Gazette,* will address the meeting on Efficiency of Railroad Operation on May 16. George A. Post, president of the Railway Business Association, will speak at the banquet on the seventeenth. W. H. Averell, general manager New York properties of the Baltimore & Ohio, will present a paper on what the transportation officer can do to promote fuel economy. The meeting will be of particular interest to operating men. There will be the usual entertainment features and unusually attractive exhibits.

### The National Safety-First Train

The "Safety First" special train of 12 cars sent out by the government started from Washington Monday morning. May 1, filled with exhibits. Van H. Manning, the director of the Bureau of Mines, Department of the Interior, is in charge of the train. The departments and bureaus represented are the Bureau of Mines, the Reclamation Service, the National Park Service, and the Indian Office of the Interior Department; the Public Health Service and the Coast Guard Service of the Treasury Department, the Forest Service and Weather Bureau of the Department of Agriculture, the Navy Department, the Interstate Commerce Commission, and the American Red Cross. The army and navy will each have a car filled with death-dealing instruments. The train will first make a tour to include 200 cities and towns on the Baltimore & Ohio and after that will be taken up by one of the other trunk line railroads.

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF FEBRUARY, 1916

| Name of road. | Average mileage operated during period. | Operating revenues | | | Operating expenses | | | | | | | Net from railway operation. | Railway tax accruals. | Operating income (or loss). | Increase (or decr.) comp. with last year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Maintenance of | | | | | | | | | | |
| | | Freight. | Passenger. | Total (inc. misc.) | Way and structures. | Equipment. | Traffic. | Transportation. | Miscellaneous. | General. | Total. | | | | |
| Grand Trunk Western | 347 | $537,000 | $110,000 | $693,443 | $50,822 | $125,491 | $14,784 | $290,263 | $4,361 | $13,404 | $499,125 | $194,318 | $32,970 | $161,269 | $148,005 |
| Great Northern | 8,102 | 2,964,821 | 799,873 | 4,279,513 | 643,082 | 746,374 | 85,534 | 1,956,977 | 64,905 | 113,030 | 3,609,173 | 670,340 | 375,953 | 293,627 | —806,694 |
| Gulf & Ship Island | 308 | 117,176 | 27,644 | 153,423 | 13,358 | 24,675 | 3,322 | 48,227 | 273 | 9,177 | 99,031 | 54,393 | 6,764 | 47,627 | 26,556 |
| Gulf, Colorado & Santa Fe | 1,938 | 976,912 | 194,503 | 1,258,041 | 174,789 | 191,749 | 30,323 | 476,356 | ..... | 43,294 | 916,151 | 341,889 | 54,920 | 286,563 | —12,625 |
| Hocking Valley | 350 | 448,334 | 59,649 | 535,937 | 50,015 | 162,703 | 8,181 | 165,744 | ..... | 13,321 | 399,965 | 135,973 | 43,200 | 92,773 | 28,894 |
| Houston, East & West Texas | 191 | 88,269 | 26,338 | 122,490 | 24,036 | 14,600 | 2,068 | 43,544 | 615 | 2,979 | 87,425 | 35,066 | 5,108 | 29,916 | 4,822 |
| Houston & Texas Central | 895 | 353,943 | 89,342 | 488,237 | 97,282 | 58,210 | 16,639 | 178,487 | 4,760 | 18,593 | 373,220 | 115,018 | 30,517 | 84,222 | —30,071 |
| Illinois Central | 4,767 | 4,382,993 | 1,067,607 | 5,871,545 | 658,552 | 1,456,601 | 113,714 | 1,903,341 | 31,264 | 142,217 | 4,296,766 | 1,574,779 | 354,400 | 1,218,290 | 419,726 |
| Indiana Harbor Belt | 110 | ..... | ..... | 348,684 | 30,779 | 47,822 | 2,660 | 156,529 | ..... | 7,961 | 245,751 | 102,933 | 7,680 | 95,253 | 39,421 |
| International & Great Northern | 1,160 | 551,984 | 132,600 | 748,946 | 113,743 | 123,812 | 20,862 | 310,798 | 2,428 | 28,862 | 585,048 | 163,898 | 40,000 | 123,317 | 88,516 |
| Kanawha & Michigan | 177 | 267,811 | 26,406 | 300,965 | 34,930 | 64,696 | 2,820 | 77,366 | ..... | 6,295 | 186,107 | 114,858 | 13,900 | 100,950 | 70,349 |
| Kansas City, Mexico & Orient | 738 | 179,543 | 25,530 | 216,638 | 49,577 | 46,181 | 9,046 | 87,544 | ..... | 10,369 | 202,716 | 13,922 | 11,165 | 2,756 | —18,592 |
| Kansas City Southern | 837 | 621,292 | 115,231 | 809,583 | 83,071 | 96,014 | 28,701 | 276,840 | ..... | 33,453 | 513,795 | 295,789 | 48,376 | 247,312 | 27,598 |
| Lake Erie & Western | 900 | 476,815 | 53,837 | 559,932 | 55,373 | 93,270 | 14,201 | 199,705 | ..... | 12,081 | 374,630 | 185,302 | 20,000 | 165,286 | 96,479 |
| Lehigh & Hudson River | 97 | 140,783 | 3,819 | 151,596 | 8,813 | 25,739 | 1,374 | 51,477 | ..... | 3,965 | 91,368 | 60,229 | 5,000 | 55,229 | 24,924 |
| Lehigh & New England | 296 | 250,196 | 1,183 | 263,373 | 33,221 | 31,578 | 1,745 | 74,015 | ..... | 5,347 | 145,892 | 117,482 | 8,820 | 108,659 | 76,022 |
| Lehigh Valley | 1,442 | 2,956,690 | 283,554 | 3,479,848 | 360,245 | 722,389 | 76,582 | 1,374,625 | 12,212 | 71,274 | 2,615,548 | 864,299 | 147,500 | 716,709 | 239,192 |
| Long Island | 397 | 305,476 | 463,970 | 900,233 | 126,233 | 135,050 | 8,185 | 453,635 | 5,531 | 29,905 | 755,632 | 144,601 | 70,778 | 73,799 | 90,943 |
| Louisiana & Arkansas | 279 | 88,815 | 13,485 | 105,977 | 21,540 | 20,248 | 3,515 | 32,309 | ..... | 4,543 | 82,155 | 23,822 | 7,920 | 15,902 | —18,445 |
| Louisiana Ry. & Navigation Co | 351 | 122,175 | 22,587 | 154,926 | 22,186 | 26,429 | 6,147 | 60,306 | ..... | 5,401 | 120,469 | 34,458 | 9,500 | 24,911 | —6,913 |
| Louisiana Western | 208 | 141,077 | 48,602 | 203,813 | 23,121 | 29,087 | 7,027 | 52,276 | 1,763 | 5,944 | 119,174 | 84,639 | 9,983 | 74,597 | 41,398 |
| Louisville & Nashville | 5,038 | 3,713,655 | 922,050 | 4,997,714 | 672,291 | 891,727 | 123,337 | 1,516,705 | 23,585 | 114,196 | 3,330,495 | 1,667,219 | 193,846 | 1,471,924 | 922,999 |
| Louisville, Henderson & St. Louis | 200 | 100,358 | 29,304 | 137,177 | 25,902 | 17,608 | 4,837 | 41,284 | ..... | 2,927 | 92,559 | 44,618 | 3,800 | 40,807 | 12,148 |
| Maine Central | 1,220 | 671,913 | 186,255 | 917,438 | 113,070 | 143,035 | 9,156 | 372,680 | 905 | 24,272 | 663,079 | 254,359 | 49,597 | 204,718 | 11,627 |
| Michigan Central | 1,803 | 2,286,842 | 689,748 | 3,350,068 | 337,088 | 514,823 | 56,997 | 1,254,832 | 47,890 | 64,553 | 2,276,182 | 1,073,885 | 140,000 | 933,407 | 694,302 |
| Midland Valley | 380 | 98,814 | 35,970 | 142,088 | 24,187 | 32,531 | 2,435 | 50,060 | ..... | 6,516 | 115,728 | 26,360 | 7,552 | 18,770 | 3,597 |
| Minneapolis & St. Louis | 1,646 | 695,804 | 141,920 | 878,096 | 86,508 | 129,043 | 16,915 | 357,591 | 101 | 21,199 | 611,357 | 266,739 | 39,026 | 227,437 | 79,850 |
| Minn., St. Paul & Sault Ste. Marie | 4,229 | 1,817,086 | 372,158 | 2,356,368 | 199,327 | 362,358 | 48,104 | 868,993 | 13,067 | 63,375 | 1,552,947 | 803,420 | 90,038 | 713,382 | 145,628 |
| Missouri & North Arkansas | 365 | 55,230 | 24,364 | 86,583 | 26,279 | 20,803 | 3,012 | 37,184 | ..... | 5,234 | 92,513 | —5,929 | 5,800 | —11,736 | 19,867 |
| Missouri, Kansas & Texas System | 3,865 | 1,757,155 | 618,938 | 2,591,158 | 623,106 | 544,754 | 58,227 | 1,011,969 | 17,556 | 99,993 | 2,345,761 | 245,398 | 130,882 | 114,416 | —740,458 |
| Missouri, Oklahoma & Gulf | 334 | 96,700 | 19,074 | 119,995 | 30,073 | 25,510 | 4,381 | 51,523 | 119 | 7,593 | 119,199 | 795 | 8,297 | —7,504 | 3,167 |
| Missouri, Oklahoma & Gulf of Texas | 125 | 20,745 | 351 | 21,247 | 3,786 | 3,072 | 2,025 | 11,138 | ..... | 1,631 | 21,658 | —405 | 282 | —687 | —701 |
| Missouri Pacific | 3,931 | 2,036,208 | 353,195 | 2,613,043 | 352,789 | 610,019 | 65,663 | 976,811 | 7,081 | 61,095 | 2,069,696 | 543,347 | 108,062 | 432,977 | 193,113 |
| Mobile & Ohio | 1,122 | 745,768 | 89,165 | 886,334 | 91,634 | 181,307 | 39,253 | 325,836 | 2,410 | 31,299 | 671,739 | 214,596 | 34,595 | 179,952 | —11,396 |
| Monongahela | 108 | 153,900 | 7,195 | 163,436 | 21,142 | 22,180 | 572 | 38,545 | ..... | 3,669 | 86,108 | 77,328 | 4,000 | 73,328 | ..... |
| Morgan's La. & Texas R. R. & S. S. Co. | 405 | 261,594 | 71,913 | 369,364 | 70,003 | 59,325 | 11,979 | 136,079 | 2,248 | 11,470 | 291,104 | 78,260 | 21,667 | 56,522 | 14,283 |
| Nashville, Chattanooga & St. Louis | 1,231 | 734,105 | 212,629 | 1,028,827 | 93,715 | 189,302 | 50,303 | 390,830 | 10,661 | 39,685 | 774,453 | 254,374 | 27,000 | 226,479 | 121,791 |
| Nevada Northern | 165 | 135,135 | 12,175 | 151,595 | 13,127 | 17,055 | 583 | 29,528 | 34 | 3,906 | 64,233 | 87,362 | 6,403 | 80,959 | 55,186 |
| New Orleans & North Eastern | 204 | 224,608 | 45,220 | 306,211 | 32,385 | 58,402 | 9,856 | 90,247 | 5,811 | 11,803 | 208,504 | 97,707 | 15,500 | 82,207 | 34,010 |
| New Orleans, Mobile & Chicago | 402 | 129,872 | 21,767 | 160,107 | 26,311 | 26,146 | 4,407 | 49,277 | ..... | 6,862 | 113,003 | 47,104 | 6,486 | 40,554 | 18,991 |
| New Orleans Great Northern | 285 | 106,438 | 23,044 | 147,536 | 20,415 | 20,886 | 1,625 | 42,218 | 177 | 4,669 | 89,990 | 57,546 | 3,351 | 54,160 | 23,266 |
| New Orleans, Texas & Mexico | 286 | 109,980 | 20,750 | 137,085 | 57,707 | 21,712 | 4,127 | 48,367 | ..... | 9,652 | 141,565 | —4,480 | 1,501 | —5,981 | —8,021 |
| New York Central Railroad | 6,093 | 11,191,930 | 3,400,793 | 16,794,757 | 1,525,138 | 3,061,338 | 227,972 | 5,843,511 | 227,766 | 393,826 | 11,279,551 | 5,115,206 | 788,021 | 4,726,006 | 3,115,812 |
| New York, Chicago & St. Louis | 570 | 1,069,420 | 75,377 | 1,190,125 | 86,461 | 245,321 | 43,028 | 489,344 | 3,910 | 23,466 | 891,531 | 298,595 | 40,000 | 256,820 | 222,572 |
| New York, New Haven & Hartford | 2,005 | 2,911,265 | 2,137,069 | 5,802,178 | 734,135 | 933,829 | 35,075 | 2,457,464 | 42,834 | 161,293 | 4,363,195 | 1,438,983 | 240,000 | 1,198,374 | —91,310 |
| New York, Ontario & Western | 568 | 523,864 | 66,474 | 678,143 | 56,760 | 120,019 | 7,253 | 297,225 | ..... | 15,010 | 496,267 | 181,877 | 21,000 | 159,441 | 89,089 |
| New York, Philadelphia & Norfolk | 112 | 295,696 | 27,964 | 344,297 | 33,931 | 68,484 | 4,594 | 136,659 | 3,598 | 11,811 | 258,773 | 85,524 | 10,000 | 75,496 | 62,443 |
| New York, Susquehanna & Western | 140 | 233,405 | 50,640 | 314,550 | 19,044 | 38,049 | 1,693 | 149,990 | ..... | 5,057 | 213,807 | 100,743 | 14,100 | 86,643 | 21,409 |
| Norfolk & Western | 2,049 | 3,988,188 | 427,672 | 4,588,416 | 406,887 | 849,130 | 58,540 | 1,142,230 | 8,261 | 75,121 | 2,522,727 | 2,065,689 | 175,000 | 1,890,322 | 1,145,524 |
| Norfolk Southern | 908 | 277,632 | 68,044 | 371,447 | 38,114 | 53,645 | 7,838 | 128,963 | 56 | 18,484 | 247,100 | 124,348 | 12,846 | 110,173 | 56,439 |
| Northern Pacific | 6,510 | 3,679,991 | 820,896 | 4,963,512 | 503,783 | 560,953 | 88,692 | 1,785,740 | 72,648 | 97,807 | 3,077,312 | 1,886,200 | 379,980 | 1,505,779 | 143,067 |
| Northwestern Pacific | 507 | 115,326 | 106,619 | 252,758 | 55,763 | 40,649 | 4,695 | 109,666 | 653 | 8,441 | 218,132 | 34,626 | 17,021 | 17,604 | 46,789 |
| Oahu Railway & Land Co | 114 | 62,151 | 20,759 | 87,853 | 9,502 | 6,118 | 806 | 22,644 | ..... | 8,281 | 47,352 | 40,501 | 8,500 | 32,001 | —13,937 |
| Oregon Short Line | 2,259 | 1,513,131 | 274,219 | 1,911,736 | 268,307 | 335,714 | 29,489 | 474,022 | 26,244 | 58,756 | 1,192,533 | 719,203 | 131,600 | 587,357 | 222,346 |
| Oregon-Washington R. R. & Nav. Co | 2,055 | 799,704 | 235,152 | 1,146,497 | 266,012 | 186,522 | 42,776 | 467,445 | 25,104 | 66,604 | 1,051,989 | 94,507 | 94,800 | —443 | —230,320 |
| Panhandle & Santa Fe | 670 | 364,701 | 71,388 | 455,382 | 64,215 | 70,240 | 4,413 | 105,535 | ..... | 11,197 | 255,225 | 200,158 | 10,573 | 189,409 | 98,608 |
| Pennsylvania Company | 1,758 | 3,773,653 | 746,844 | 4,989,286 | 665,013 | 976,752 | 77,387 | 1,869,145 | 31,059 | 154,803 | 3,773,022 | 1,216,265 | 281,575 | 934,686 | 690,593 |
| Pennsylvania Railroad | 4,541 | 12,437,323 | 3,066,152 | 17,028,693 | 2,188,189 | 3,726,987 | 180,262 | 6,421,116 | 230,627 | 436,434 | 13,183,615 | 3,845,078 | 674,620 | 3,168,322 | 2,162,976 |
| Pere Marquette | 2,248 | 1,256,180 | 274,808 | 1,669,081 | 97,151 | 409,939 | 30,417 | 620,482 | 3,255 | 42,359 | 1,203,323 | 465,758 | 100,429 | 365,234 | —35,973 |
| Philadelphia & Reading | 1,120 | 4,011,474 | 503,530 | 4,757,842 | 258,129 | 883,103 | 48,088 | 1,683,474 | 13,280 | 78,996 | 2,963,592 | 1,794,250 | 100,405 | 1,693,031 | 882,608 |
| Philadelphia, Baltimore & Washington | 717 | 887,411 | 717,903 | 1,783,615 | 247,973 | 343,787 | 23,804 | 754,528 | 131 | 49,611 | 1,419,834 | 363,782 | 56,688 | 306,307 | 259,697 |
| Pittsburgh & Lake Erie | 225 | 1,586,434 | 129,760 | 1,821,843 | 136,699 | 272,047 | 12,608 | 428,523 | 3,562 | 29,365 | 882,805 | 939,038 | 58,700 | 880,338 | 657,964 |
| Pittsburgh, Cincinnati, Chic. & St. Louis | 1,489 | 2,731,630 | 645,473 | 3,810,226 | 500,105 | 798,332 | 61,838 | 1,403,873 | 26,075 | 95,811 | 2,885,895 | 924,331 | 171,299 | 752,992 | 427,623 |
| Pittsburgh, Shawmut & Northern | 294 | 198,267 | 8,115 | 208,427 | 24,046 | 57,171 | 1,750 | 73,784 | ..... | 4,704 | 161,456 | 46,971 | 1,832 | 45,139 | 10,413 |
| Port Reading | 21 | 143,980 | ..... | 160,096 | 3,801 | 13,890 | 38 | 91,717 | ..... | 232 | 109,676 | 50,420 | 10,000 | 40,420 | —16,938 |
| Richmond, Fredericksburg & Potomac | 88 | 145,804 | 116,788 | 305,709 | 14,535 | 29,817 | 3,595 | 93,714 | 4,516 | 8,346 | 154,524 | 151,185 | 8,867 | 142,301 | 63,764 |
| Rutland | 468 | 168,665 | 73,977 | 277,876 | 30,279 | 59,177 | 8,361 | 109,727 | 1,015 | 5,636 | 214,195 | 63,681 | 17,101 | 46,579 | 21,836 |
| St. Joseph & Grand Island | 257 | 122,232 | 25,440 | 154,423 | 26,971 | 22,317 | 4,591 | 52,152 | ..... | 5,003 | 111,033 | 43,390 | 7,962 | 35,243 | 21,941 |
| St. Louis, San Francisco & Texas | 244 | 55,525 | 19,324 | 83,273 | 16,039 | 15,613 | 2,115 | 42,147 | ..... | 4,341 | 80,256 | 3,017 | 1,565 | 1,452 | 13,480 |
| St. Louis, Brownsville & Mexico | 548 | 119,292 | 59,294 | 195,711 | 41,243 | 33,767 | 5,541 | 73,570 | ..... | 10,518 | 158,275 | 37,436 | 8,000 | 29,432 | —22,342 |
| St. Louis, Iron Mountain & Southern | 3,361 | 1,763,968 | 414,344 | 2,409,889 | 582,751 | 510,107 | 67,173 | 772,382 | 7,560 | 64,495 | 2,000,019 | 409,870 | 112,968 | 294,682 | —279,980 |
| St. Louis Merchant's Bridge Terminal | 9 | ..... | 290 | 214,068 | 28,448 | 12,883 | 845 | 97,015 | ..... | 5,819 | 145,011 | 69,057 | 7,600 | 61,457 | 27,253 |
| St. Louis & San Francisco | 4,750 | 2,577,790 | 826,265 | 3,687,414 | 506,917 | 649,529 | 67,145 | 1,212,142 | ..... | 99,766 | 2,496,171 | 1,191,243 | 171,860 | 1,018,257 | 141,461 |
| St. Louis Southwestern | 943 | 492,105 | 90,198 | 622,533 | 64,511 | 115,936 | 32,482 | 181,562 | 2,571 | 26,142 | 423,101 | 199,431 | 29,745 | 169,606 | 42,733 |

## Conferences on Wage Demands of Train Employees to Begin June 1

At a meeting held in Chicago on April 27 between J. W. Higgins, executive secretary of the Association of Western Railways; J. G. Walber, secretary of the Conference Committee of Managers for eastern territory; Charles P. Neill, manager of the Bureau of Information of the Southeastern Railroads, and the presidents of the four brotherhoods of train service employees, it was practically decided to begin conferences between the representatives of the employees and a joint conference committee of managers representing all the roads at New York City on June 1. At these meetings the demands of the employees for the eight-hour basic day and time and one-half for overtime presented to the roads on March 30 will be discussed in detail.

The general conference committee to represent the railroads in the negotiations will consist of seventeen members, six for the Western roads, six for the Eastern, and five for the Southeastern, as follows: C. W. Kouns, general manager of the Eastern Lines of the Atchison, Topeka & Santa Fe; G. H. Emerson, general manager of the Great Northern; A. S. Greig, assistant to receivers St. Louis & San Francisco; James Russell, general manager Denver & Rio Grande; P. H. Morrissey, assistant to vice-president Chicago, Burlington & Quincy, and one Western man to be appointed; Elisha Lee, assistant general manager Pennsylvania Railroad; A. M. Schoyer, vice-president Pennsylvania Lines West; P. E. Crowley, assistant vice-president New York Central; A. J. Stone, vice-president Erie; H. W. McMaster, general manager of the Wheeling & Lake Erie, and C. L. Bardo, general manager of the New York, New Haven & Hartford; E. H. Coapman, vice-president and general manager of the Southern Railway; N. D. Maher, vice-president of the Norfolk & Western; L. M. Baldwin, general manager of the Central of Georgia; Lyman Delano, vice-president of the Atlantic Coast Line, and W. L. Seddon, vice-president of the Seaboard Air Line.

The first meeting of the railroad committee with the committee representing employees will be held in New York City on June 1. It is understood that the representatives of the employees from the different districts will have preliminary conferences with the railroad representatives from those districts, and take up with them the reply which the railroads have made.

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## Railway Earnings and Expenses for February

Net operating income of the railways of the United States for February increased $116 per mile, or 67.8 per cent, as compared with February, 1915, according to the monthly bulletin of the Bureau of Railway Economics. Comparing February, 1916, with the average February of the preceding five years, the increase was 61.1 per cent.

Total operating revenues amounted to $261,904,120, an increase over 1915 of $56,815,210. Operating expenses were $183,677,515, an increase of $28,754,167. Net operating revenue amounted to $78,226,605, an increase of $28,061,043. Taxes amounted to $12,234,141, an increase of $1,135,139. This left $65,941,090 net operating income available for rentals, interest on bonds, appropriations for improvements and new construction and dividends. Operating revenues per mile averaged $1,140, an increase of 26.8 per cent; operating expenses per mile averaged $800, an increase of 17.7 per cent; net operating revenue per mile averaged $340, an increase of 54.8 per cent, while net operating income per mile was $287, an increase of 67.8 per cent. Taxes per mile increased 9.4 per cent. Railways operating 229,617 miles of line are covered by this summary, or about 90 per cent of the steam railway mileage in the United States.

Operating revenues of the Eastern railways per mile show an increase of 35.2 per cent as compared with February, 1915; operating expenses increased 21.6 per cent, net operating revenue increased 89.1 per cent, and taxes increased 10.8 per cent. Operating income increased 115.8 per cent. Comparison of February, 1916, with the average February for five years past shows an increase of 108.9 per cent.

Operating revenues of the Southern railways per mile increased 27.1 per cent, operating expenses increased 12.7 per cent, net operating revenue increased 69.5 per cent, and taxes increased 12.5 per cent. Operating income increased

REVENUES AND EXPENSES OF STEAM ROADS—FEBRUARY, 1916

| Account. | United States | | | | Eastern District | | | | Southern District | | | | Western District | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Amount, February, 1916 | Per mile of line | | Increase over 1915 Per cent | Amount, February, 1916 | Per mile of line | | Increase over 1915 Per cent | Amount, February, 1916 | Per mile of line | | Increase over 1915 Per cent | Amount, February, 1916 | Per mile of line | | Increase over 1915 Per cent |
| | | 1916 | 1915 | | | 1916 | 1915 | | | 1916 | 1915 | | | 1916 | 1915 | |
| Total Operating Revenues | $261,904,120 | $1,140 | $900 | 26.8 | $120,310,655 | $2,037 | $1,506 | 35.2 | $41,195,463 | $971 | $764 | 27.1 | $100,398,002 | $784 | $663 | 18.2 |
| Freight | 190,642,695 | 830 | 629 | 32.1 | 87,970,378 | 1,490 | 1,049 | 42.0 | 30,646,073 | 723 | 552 | 30.8 | 72,026,244 | 562 | 459 | 22.5 |
| Passenger | 46,618,325 | 203 | 182 | 11.7 | 20,381,965 | 345 | 300 | 15.0 | 7,448,535 | 176 | 152 | 15.8 | 18,787,825 | 147 | 136 | 7.2 |
| Mail | 5,000,790 | 22 | 21 | 4.5 | 1,850,351 | 31 | 29 | 6.7 | 637,788 | 15 | 15 | 1.0 | 2,512,651 | 20 | 19 | 4.0 |
| Express | 6,382,245 | 28 | 21 | 29.1 | 2,918,455 | 49 | 36 | 38.2 | 1,031,691 | 24 | 18 | 35.1 | 2,432,099 | 19 | 16 | 18.0 |
| All other | 13,260,065 | 57 | 47 | 23.3 | 7,189,506 | 122 | 92 | 31.9 | 1,431,376 | 33 | 27 | 24.8 | 4,639,183 | 36 | 33 | 12.0 |
| Total Operating Expenses | 183,677,515 | 800 | 680 | 17.7 | 86,275,131 | 1,461 | 1,202 | 21.6 | 27,232,869 | 642 | 570 | 12.7 | 70,169,515 | 548 | 474 | 15.6 |
| Maintenance of way and structures | 28,977,322 | 126 | 102 | 23.7 | 12,139,051 | 206 | 169 | 21.4 | 4,694,873 | 111 | 102 | 8.1 | 12,143,398 | 95 | 71 | 34.1 |
| Maintenance of equipment | 47,690,101 | 208 | 169 | 22.8 | 23,075,703 | 391 | 313 | 25.0 | 7,651,852 | 180 | 146 | 23.6 | 16,962,546 | 132 | 110 | 20.1 |
| Traffic | 4,835,820 | 21 | 22 | d 4.9 | 1,767,731 | 30 | 35 | d 13.4 | 957,149 | 23 | 21 | 5.6 | 2,110,940 | 16 | 17 | d 1.0 |
| Transportation | 93,875 584 | 409 | 354 | 15.4 | 45,528,159 | 771 | 629 | 22.6 | 12,713,358 | 300 | 276 | 8.5 | 35,634,067 | 278 | 253 | 10.1 |
| General | 6,583,467 | 28 | 27 | 8.4 | 2,894,971 | 49 | 43 | 12.7 | 1,046,590 | 24 | 23 | 9.0 | 2,641,906 | 21 | 20 | 4.1 |
| All other | 1,715,221 | 8 | 6 | 33.6 | 869,516 | 14 | 13 | 13.7 | 169,047 | 4 | 1 | 226.1 | 676,658 | 6 | 3 | 45.9 |
| Net Operating Revenue | 78,226,605 | 340 | 220 | 54.8 | 34,035,524 | 576 | 304 | 89.1 | 13,962,594 | 329 | 194 | 69.5 | 30,228,487 | 236 | 189 | 24.6 |
| Taxes | 12,234,141 | 53 | 49 | 9.4 | 5,054,115 | 86 | 77 | 10.8 | 1,790,290 | 42 | 38 | 12.5 | 5,389,736 | 42 | 39 | 7.5 |
| Uncollectible Revenues | 51,374 | * | * | .... | 15,778 | * | * | .... | 11,787 | * | * | .... | 23,809 | * | * | .... |
| Railway Operating Income | 65,941,090 | 287 | 171 | 67.8 | 28,965,631 | 490 | 227 | 115.8 | 12,160,517 | 287 | 156 | 83.4 | 24,814,942 | 194 | 150 | 29.2 |
| Operating Ratio—Per cent— | | | | | | | | | | | | | | | | |
| 1916 | | 70.1 | | | | 71.7 | | | | 66.1 | | | | 69.9 | | |
| 1915 | | 75.5 | | | | 79.8 | | | | 74.6 | | | | 71.4 | | |
| Average mileage represented— | | | | | | | | | | | | | | | | |
| 1916 | | 229,617 | | | | 59,055 | | | | 42,417 | | | | 128,145 | | |
| 1915 | | 227,981 | | | | 58,931 | | | | 42,039 | | | | 127,011 | | |

*Less than one dollar. d Decrease.

83.4 per cent. Comparing February, 1916, with the average for five years past, the increase was 48.5 per cent.

Operating revenues of the Western railways per mile show an increase of 18.2 per cent, operating expenses increased 15.6 per cent, net operating revenue increased 24.6 per cent, and taxes increased 7.5 per cent. Operating income increased 29.2 per cent. Compared with the average for five years past, operating income for February, 1916, increased 32.5 per cent.

The eight months of the current fiscal year, compared with the corresponding period of the preceding year, show changes per mile of line as follows: Operating revenues increased 14.2 per cent, operating expenses increased 4.9 per cent, net operating revenue increased 36.4 per cent, taxes increased 6.5 per cent, and operating income increased 41.9 per cent.

Operating income per mile increased 61.4 per cent in the East, increased 51.7 per cent in the South, and increased 23.9 per cent in the West.

February operating income per mile was 67.8 per cent greater in 1916 than in 1915, 142.9 per cent greater than in 1914, 35.4 per cent greater than in 1913, and 37.8 per cent greater than in 1912.

### An Automatic Stop on the Chesapeake & Ohio

The Chesapeake & Ohio is to try the "American Train Control System" (automatic stop) on four miles of its line, single-track, between Gordonsville, Va., and Lindsay; and about 25 locomotives are to be equipped with the apparatus. We understand this system to be the same as that described in the *Railway Age Gazette*, April 11, 1913, when it was installed on a short section of the Maryland & Pennsylvania, near Baltimore, Md. It has been tried recently by the Chesapeake & Ohio on a piece of double track east of Richmond, with results reported as satisfactory. The apparatus works by means of an intermittent contact rail, and with each rail which is designed to cause an application of the brakes of trains there is installed, a suitable distance in the rear, another rail, which does not apply brakes, but instead gives an audible signal in the cab.

### New York Trade Press Fights Nation-Wide Increase in Cost of Photo-Engravings

The New York Trade Press Association, representing the trade and technical papers of the city, is now leading a fight against what it believes to be the arbitrary and illegal action of the photo-engraving firms of New York. The latter recently banded together under the name of the Photo-Engravers' Board of Trade, and notified all users of photo engravings of an advance in prices ranging from 20 to 200 per cent, effective April 1.

This action is of nation-wide significance, not only to publishers but to the railroads, supply houses and all other users of photo engravings. Although the New York Trade Press Association is dealing only with conditions in New York, it is noteworthy that the photo engravers have succeeded in putting into effect a similar scale in Chicago, with little or no opposition from the publishers, and have planned to put it into effect in over 30 other cities. In New York it was assumed that there would also be no opposition. The New York trade and technical publishers, however, after looking into the matter, have come to the conclusion that the action of the Photo-Engravers' Board of Trade is clearly illegal, in that it is a combination in restraint of trade and as such is in direct violation of the New York state Donnelly anti-trust act, the teeth of which are even sharper than those of the Sherman anti-trust law.

The New York Trade Press Association, represented by its officers: A. C. Pearson, vice-president of the Dry Goods Economist; H. E. Cleland, of the Electrical World; Henry Lee, vice-president of the Simmons-Boardman Publishing Company, the publishers of the *Railway Age Gazette;* S. T. Henry, vice-president of the McGraw Publishing Company; Milton Weil, of Musical America, and by G. E. Sly, of the American Architect, has therefore brought the matter to the attention of Judge Swann, district attorney for New York county.

Judge Swann has expressed his opinion that the photo engravers are guilty of violation of the Donnelly act and have thereby laid themselves open to indictment. Conferences have been held, but the matter is pending, as this goes to press, awaiting the submission to the district attorney by the attorney for the photo engravers, George Gordon Battle, of a brief in which he proposes to show that no violation of the law had been committed or contemplated.

The publishers believe firmly that the engravers may also be liable under national law, inasmuch as it appears that wherever the Chicago scale has been proposed there is precisely the same increase in the photo engravers' prices. As far as the New York situation alone is concerned, they are particularly interested in Judge Swann's statement that it is his full intention to lay the matter before the grand jury if the photo engravers do not promptly abandon their combination.

### Salt Lake Route Farmers' School

The agricultural instruction train of the San Pedro, Los Angeles & Salt Lake, which has been making a tour of Utah and Nevada, consists of a locomotive and 13 cars, as was recently noted in the *Railway Age Gazette*. Not only is this train over 1,000 ft. long; it is "the most elaborate demonstration train ever despatched over the lines of an American railway." This we learn from the traffic department of the Salt Lake Route. Five of the cars carry five advertising displays, and the whole list is as follows:

Exhibit Car No. 1 carries the exhibit of the Consolidated Wagon Company, Holt Manufacturing Company of California, and John Deere Company, of Moline, Ill.; Holt caterpillar tractor and John Deere plows. These will be unloaded at each town where a stop is made, and used in giving practical demonstrations. Exhibit Car No. 2 carries the exhibit of the Consolidated Wagon & Machine Company, and the John Deere Company, of Moline, Ill., showing machinery for the planting, harvesting and handling of crops. Exhibit Car No. 3 carries exhibits of Fairbanks, Morse & Co.'s pumps, water handling machinery and electric motors.

Exhibit Car No. 4 contains the exhibit of the Utah-Idaho Sugar Company; sugar beet culture, with demonstrations. Exhibit Car No. 5 contains the exhibit of the General Electric Company; modern electric appliances devoted to the development of home economics; electric stoves, ranges, washing machines, ovens, flat irons, etc.

Exhibit Car No. 6; blooded stock exhibit of the Utah Agricultural college. Exihibit Car No. 7; government exhibit for the extension of information regarding the scientific production of all classes of wool.

Exhibit Car No. 8; Utah Agricultural college; irrigation, ranch sanitation, scientific building construction and other subjects allied with ranch development. Exhibit Car No. 9; home economic department of the Utah Agricultural college.

Car No. 10, lecture coach; No. 11, Pullman sleeping car; No. 12, dining car; No. 13, Salt Lake Route business car No. 100.

### American Society for Testing Materials

The nineteenth annual meeting of the American Society for Testing Materials will be held at Atlantic City, N. J., June 27 to 30. Headquarters for the meeting will be at the Hotel Traymore. A summarized program of the meeting follows:

*First session,* Tuesday, June 27, 11 a. m.—Minutes of eighteenth annual meeting; report of executive committee; various committee reports; announcement of election of officers; miscellaneous business.

*Second session,* Tuesday, 3 p. m.—Reports of committees on miscellaneous materials.

*Third session,* Tuesday, 8 p. m.—Presidential address and reports on heat treatment of steel.

*Fourth session,* Wednesday, 10 a. m.—Reports on steel and iron.

Wednesday afternoon will be reserved for recreation.

*Fifth session,* Wednesday, 8 p. m.—Reports on tests and testing.

*Sixth session,* Thursday, 10 a. m.—Reports on cement and concrete.

*Seventh session,* Thursday, 3 p. m.—Reports on ceramics and road materials.

Thursday evening will be reserved for a smoker.

*Eighth session,* Friday, 10 a. m.—Reports on non-ferrous metals and cast iron.

*Ninth session,* Friday, 3 p. m.—Reports on miscellaneous materials.

The nominating committee has agreed to the following selec-

tions: For president, A. A. Stevenson; for vice-president, S. S. Voorhees; for members of the executive committee, W. H. Bassett, John Brunner, G. W. Thompson and F. E. Turneaure.

### Air Brake Convention

The twenty-third annual convention of the Air Brake Association was called to order at 9.40 Tuesday morning, May 2, at the Hotel Ansley, Atlanta, Ga., J. T. Slattery, superintendent, Denver & Rio Grande, presiding. The association was welcomed to the city by the mayor, J. G. Woodward. A complete report of the convention will be published in next week's issue. The following is a list of the companies exhibiting at the convention and their representatives:

Ashton Valve Company, Boston, Mass.—Gages, wheel press recording gage and safety valves. Represented by J. F. Gettrust.

Detroit Lubricator Company, Detroit, Mich.—Lubricators and flange oiler. Represented by A. G. Machesney and A. D. Homard.

Dixon Company, Joseph, Jersey City, N. J.—Graphite products for railway service. Represented by J. P. Chase, J. H. Lewis and L. H. Snyder.

Edna Brass Manufacturing Company, Cincinnati, Ohio—Injectors, lubricators, boiler checks, fire extinguishers, coal sprinklers and water gages. Represented by E. O. Corey and J. Kirkpatrick.

Garlock Packing Company, Palmyra, N. Y.—Air pump packing and air brake gaskets. Represented by L. P. Duggan and W. N. Todd.

Johns-Manville Company, H. W., New York City—Cylinder packing, expanding ring packing and slack adjuster. Represented by G. Christenson, J. F. Meek, W. T. Newman and E. T. Wade.

Leslie Company, The, Lyndhurst, N. J.—Leslie pressure regulators. Represented by S. I. Leslie.

Marvin Manufacturing Company, Franklin, Pa.—Air brake cylinder compound. Represented by T. G. Averill.

Nathan Manufacturing Company, New York—Lubricators. Represented by J. C. Currie.

New York Air Brake Company, New York—P. S. brake equipment and air pump strainers. Represented by H. F. Bickell, N. A. Campbell, W. C. Elliot, J. A. Hicks, B. Hyanes and L. W. Sawyer.

New York and New Jersey Lubricant Company, New York—Non-Fluid oil brake cylinder lubricant and N. F. O. triple valve lubricant. Represented by J. H. Bennis and Guy Melchor.

New York Belting and Packing Company, New York—Air pump gaskets, rubber hose for railway work, water gage gaskets and sheet packing. Represented by L. F. Purtill.

Peerless Rubber Company, New York—Pneumatic tool hose, locomotive throttle packing and air pump packing. Represented by C. S. Prosser.

Schuyler, F. R., Paterson, N. J.—Improved air hose gaskets. Represented by P. R. Schuyler.

Simmons-Boardman Publishing Company, New York. Represented by H. H. Marsh and R. E. Thayer.

Westinghouse Air Brake Company, Pittsburgh, Pa.—Parsite governor, C-3-A conductor valve, orifice disc holder for pump tests, curled hair air strainer, hose coupling gasket gage and miscellaneous air brake devices. Represented by A. L. Berghane, R. Burgess, H. H. Burus, L. M. Carlton, R. J. Cunningham, E. H. Dewson, F. B. Farmer, J. S. Y. Fralich, J. Hume, F. B. Johnson, C. H. King, C. H. Larimer, H. Orchard, F. H. Parke, W. H. Sleet, W. V. Turner and H. A. Wahlert.

### The June Conventions

The item in last week's issue announcing the appointment of the nominating committee of the Railway Supply Manufacturers' Association seems to have given the impression that this committee nominates not only the president and vice-president, but also the members of the executive committee. The nominating committee nominates only the president and vice-president. Members of the executive committee coming from the various districts are selected by the members residing in these districts.

The chairman of the entertainment committee of the Railway Supply Manufacturers' Association, Gilbert E. Ryder, Locomotive Superheater Company, New York, reports that arrangements are being made to re-establish the baseball game on Saturday afternoon. This year the teams will represent the two railroad associations; that is, the game will be played by teams representing respectively the Master Car Builders' and the Master Mechanics' associations. The teams are now being organized by M. C. M. Hatch, supervisor of fuel service of the Delaware, Lackawanna & Western, who will manage the Master Mechanics' team, and A. La Mar, master mechanic of the Pennsylvania Lines West, at Chicago, who will manage the Master Car Builders' team.

Provisions are also being made for the best golf tournament that the conventions have ever had. The arrangements are under the direct supervision of E. H. Bankard, Jr., Cambria Steel Company, Chicago, acting for the entertainment committee.

### Central Railway Club

At the next regular meeting of the Central Railway Club, to be held at the Hotel Statler, Buffalo, N. Y., on May 12, a paper will be presented by S. S. Riegel, mechanical engineer of the Delaware, Lackawanna & Western, on "The Modern Superheater and Its Performances."

## MEETINGS AND CONVENTIONS

*The following list gives names of secretaries, date of next or regular meetings and places of meeting.*

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 165 Broadway, New York City. Next convention, May 2-5, 1916, Atlanta, Ga.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, June 26, 1916, Boston, Mass.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Annual convention, October 19-21, 1916, New Orleans, La.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, East St. Louis, Ill. Next meeting, June 20-23, 1916, Cincinnati, O.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Annual meeting, August 16-18, 1916, Memphis, Tenn.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Annual convention, October 9-13, Atlantic City, N. J.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConnaughy, 165 Broadway, New York. Annual convention, October 9-13, Atlantic City, N. J.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPEFITTERS' ASSOCIATION.—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Next convention, May 22-24, 1916, Hotel Sherman, Chicago.

AMERICAN RAILWAY ASSOCIATION.—J. F. Fairbanks, general secretary, 75 Church St., New York. Next meeting, May 17, 1916, Biltmore Hotel, New York.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 17-19, 1916, New Orleans, La.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 20-22, 1917, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Building, Chicago. Annual meeting, June 19-21, 1916, Atlantic City, N. J.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, August 24-26, 1916, Hotel Sherman, Chicago.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 27-30, Hotel Traymore, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 23-25, 1917, New York.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, Rooms 1116-8 Woodward Bldg., Washington, D. C. Annual meeting, June 28, 1916, Hotel Statler, Detroit, Mich.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Semi-annual meeting with Master Car Builders' Association. Annual convention, October 10, 1916, Waldorf-Astoria, New York.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, Terminal Station, Central of New Jersey, Jersey City, N. J. Next meeting, May 17, 1916, Hotel Traymore, Atlantic City, N. J.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Semi-annual meeting, June 16, 1916, Hotel Denis, Atlantic City, N. J.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 20-22, 1916, St. Paul, Minn.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Next meeting, June 27,28, Boston, Mass.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—P. C. Jacobs, H. W. Johns-Manville Co., Chicago. Meetings with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Traffic Manager, R. F. & P., Richmond, Va. Annual session, May 17, 1916, Washington, D. C.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio. Next meeting, August 15-17, 1916, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, C. B. & Q. R. R., 702 E. 51st St., Chicago. Annual meeting, May 15-18, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Annual meeting, August 29 to September 1, Hotel Sherman, Chicago.

MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 17-19, Philadelphia, Pa.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 23-26, 1916, Hollenden Hotel, Cleveland, Ohio.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next annual meeting, September, 12-14, 1916, "The Breakers," Atlantic City, N. J.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Building, Chicago. Annual meeting, June 14, 1916, Atlantic City, N. J.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 349 People's Gas Bldg., Chicago. Next convention, March, 1917, Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Annual meeting, December, 1916, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RAILWAY DEVELOPMENT ASSOCIATION.—H. O. Hartzell, B. & O. R. R., Baltimore, Md. Next meeting, May 9-11, St. Charles Hotel, New Orleans, La.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Annual meeting, October 3-5, 1916, New York.

RAILWAY REAL ESTATE ASSOCIATION.—Frank C. Irvine, 1125 Pennsylvania Station, Pittsburgh, Pa. Annual meeting, October 10, 1916, Chicago.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Semi-annual meeting, May 24-25, 1916, Hotel Astor, New York. Next annual convention, September, 1916, Grand Hotel, Mackinac Island, Mich.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, N. Y. C. R. R., Box C, Collinwood, Ohio. Annual meeting, May 15-17, 1916, Hotel Statler, Detroit, Mich.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders' and Master Mechanics' Associations.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Next annual convention, September 19-22, 1916, New York.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEWARK.—Roy S. Bushy, Firemen's Bldg., Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, 559 Broad St., Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings, bi-monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—W. S. Crilly, 620 South 7th St., St. Louis, Mo. Annual meeting, December 5, 1916. Noonday meetings, October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next convention, June 20, 1916, Toronto, Ont.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Next meeting, September 5-8, 1916, Hotel Sherman, Chicago.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Grand Pacific Hotel, Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

# Traffic News

On April 26 the Baltimore & Ohio lifted its embargo on grain for Baltimore from points west of Pittsburgh and Wheeling. This action indicates the relief of a severe condition of congestion which has lasted four months. The Southern Pacific has removed the embargoes on eastbound freight through Galveston and New Orleans, destined for New York, by boat. This, however, does not apply to export freight on through bills of lading.

The Eastern Freight Accumulation Conference reports that consignees are not unloading cars at the stations on the New York, New Haven & Hartford with sufficient diligence, and the embargo committee has been instructed to keep in force the present embargoes, and even to impose new restrictions in some cases. The number of cars on the New Haven tracks April 28 was 51,538, an increase of 4,655 over the minimum number reported since the conference began to supervise matters. Bridgeport has been added to the list of congested cities, and a number of embargoes have been stiffened; while at the same time a long list of exceptions is published. The secretary of the Hartford (Conn.) Chamber of Commerce says that instead of getting better, things have gone from bad to worse, and that there is now an absolute stagnation of freight traffic. In a day, of 24 hours, the New Haven road placed on tracks in Hartford 505 loaded cars; in that time only 97 were released, and there were waiting outside 282 cars which would have been placed if room could have been found for them.

The "Travel Bureau" of the passenger department of the New York Central, New York City, reports that inquiries concerning summer resort business are coming in much earlier than in any preceding year, and a heavy business is expected. The interest manifested thus early in California indicates that the volume of travel to the Pacific coast may be as great as that of last summer. Four steamship lines will run vessels to Alaska this summer so that there will be sailings twice a week. In the Adirondack Mountains and other eastern resorts preparations are being made for a large business this summer. The New York Central is going to offer a northern trip on which the passenger will be kept away from home throughout 15 days for $17. These special excursions will start from New York only on two days in each week, Tuesday and Wednesday. The popularity of northern resorts was increased during the past winter by large numbers of cold weather tourists.

The plans for reconstructing the railroad and the freight facilities of the New York Central on the west side of New York City, at an expense of twenty-five to fifty millions of dollars, heretofore noticed in the *Railway Age Gazette*, are this week the subject of public hearings at which the city officers listen to the criticisms of taxpayers and others concerning the tentative bargain, which, on behalf of the city, has been made with the railroad company. Among the critics are former city officers, some of whom propose that all railway freight facilities on the Hudson River shore shall be made available for use by the roads terminating in Jersey City, to be connected with New York, presumably, by tunnels beneath the river. The discussions of these proposals, as published, have nothing to say concerning the very steep grades that would be required in a line running beneath the river and terminating close to the shore, nor is there any estimate of the cost. The United Real Estate Owners' Association takes this occasion to propose that a great central freight terminal be built on land lying about three blocks north of the City Hall, and three blocks east of Broadway. This otherwise preposterous proposal is given an air of reasonableness by the fact that the proposed site, several acres in extent, has already been cleared of its old buildings, preparatory to putting up a twelve-million-dollar court house. To carry out this idea it would be necessary to find (a) another place for the court house, (b) investors to establish the terminal (unless the city were to go into the business of freight transportation), and (c) to pierce a tunnel beneath the streets and the Hudson river to permit the New Jersey railroads to reach the new terminal.

# Commission and Court News

## INTERSTATE COMMERCE COMMISSION

The Public Utilities Commission of Colorado has filed a petition with the Interstate Commerce Commission, asking for reductions ranging from 25 to 35 per cent in freight rates on all classes from Denver and other Colorado points to points in the Northwest, the Southwest and on the Pacific coast. The petition says that the present rates have retarded the commercial growth of Denver, Pueblo, Colorado Springs and other Colorado cities.

### Complaint Dismissed

*Shippers of Eastman, Ga., v. Southern Railway et al. Opinion by the commission:*

The present class and commodity rates from New York, Cincinnati and Memphis to Eastman, Ga., are not found discriminatory. (38 I. C. C., 672.)

### Rates on Coal from Birmingham, Ala.

*R. Hudson Burr et al as Railroad Commissioners of the State of Florida v. Central of Georgia et al. Opinion by Commissioner Clements:*

Rates on coal in carloads from Birmingham, Acmar and Margaret, Ala., points in the Birmingham coal district to Quincy, Tallahassee, Madison, Monticello and Apalachicola, Fla., are not found discriminatory. Complaint dismissed. (38 I. C. C., 711.)

### Rates on Plaster from Acme, Tex.

*American Cement Plaster Company v. Atchison, Topeka & Santa Fe. Opinion by Commissioner Daniels:*

The rates on cement plaster in carloads from Acme, Tex., to points on the Santa Fe in Oklahoma, Kansas, Colorado, Missouri, Iowa and Illinois are not found unreasonable. They are held prejudicial on shipments to all points on the Santa Fe embraced in this complaint, which take rates from Acme, Tex., and Oriental, N. Mex., on this commodity higher than 13 cents. (38 I. C. C., 639.)

### Peninsular & Occidental Steamship Company

*Opinion by Commissioner Meyer:*

In the original report in this case, 37 I. C. C., 432, the commission found that the joint ownership of the Peninsular & Occidental Steamship Company by the Florida East Coast and the Atlantic Coast Line was in the interest of the public. No order was entered, however, because of certain phases of the steamship company's operations, which did not appear to be in harmony with the spirit of the law. Upon further consideration of the facts, and in view of revisions in the rates and the divisions thereof made in accordance with the commission's recommendations, an order is entered granting the petition of the railroads to retain their interest in the steamship company. (38 I. C. C., 662.)

### Commission Has Jurisdiction Over Domestic Movement of Traffic Originating in Canada

*C. S. Emery & Co. v. Boston & Maine. Opinion by the commission:*

Shipments of freight from Canada to the United States entered at Newport, Vt., are consigned to brokers at Newport who pay the customs duties and forward the shipments to the ultimate consignees. Defendant's agent at Newport is also a licensed customs broker, and defendant permits him to "expense forward" on the waybills that accompany the shipments the customs duties which he pays, together with his brokerage fees. Other licensed customs brokers are denied this service.

The commission denies a motion for dismissal of complaint for want of jurisdiction, holding that it has jurisdiction over the domestic movement of traffic originating in Canada.

It holds further that the duty of carriers not to discriminate between persons is owed only to patrons of their transportation service, but customs brokers, who act as consignees at ports of entry, and who forward the shipments consigned to them for entry to the ultimate consignees, are patrons of the transportation service afforded by the carrier employed. The duty of carriers not to discriminate between shippers also obtains for voluntary as well as for compulsory services. (38 I. C. C., 636.)

### C. F. A. Fresh Meat and Packing House Product Rates

*In re central freight association territory fresh meat and packing-house product rates. Opinion by Commissioner Meyer:*

By the suspended tariffs respondents proposed increased rates on fresh meat, packing-house products packed, and packing-house products loose, between points in central freight association territory, and increased carload minima applicable to fresh meat and packing-house products loose for the same movements. The rates thus proposed for fresh meat are 144 per cent, for packing-house products loose 115 per cent, and for packing-house products packed 100 per cent of the mileage scale of live stock rates, which was under consideration and found not justified in Eastern Live Stock Case, 36 I. C. C., 675, 677.

In view of the latter decision the respondents abandoned their claims to have justified the rates under suspension, and asked that rates not published in the suspended schedules be approved. In the meantime the commission extended a pending general investigation so as to include official and southern classification territories. Upon all the facts, the commission now holds that the suspended schedules should be canceled, but without prejudice to the filing of new tariffs naming rates on packing-house products packed and packing-house products loose.

Proposed increased carload minima applicable to fresh meat and packing-house products loose, between points in central freight association territory, are found to have been justified. (38 I. C. C., 665.)

## STATE COMMISSIONS

The Louisiana Railroad Commission has denied the petition of the Western Demurrage and Storage Bureau to allow the application to Louisiana intrastate business of the changes in demurrage rates and rules approved by the Interstate Commerce Commission to be effective from April 1 to June 15. The commission says in its decision that the Interstate Commerce Commission issued the authority for these changes in an effort to relieve the car shortage, but that the car shortage is due in great measures to the large number of cars tied up at the various ports awaiting opportunity to discharge their loads to the ships bound for foreign shores; that no specific cases could be shown as to intrastate shipments in Louisiana where the practice exists of shippers holding up cars in order that warehouse charges might be avoided, and that the commission does not believe that the abrogation of its demurrage rates and regulations covering simply intrastate shipments would in any way assist in bringing about the objects sought.

## PERSONNEL OF COMMISSIONS

Edwin Corr, a lawyer, of Bloomington, has been appointed a member of the Indiana State Public Service Commission, in place of Charles J. Murphy, resigned. Mr. Corr has been a member of the legislature and has been also deputy attorney general of the state.

## UNITED STATES SUPREME COURT

### Notice of Claim for Injuries to Stock May be Given to Connecting Carrier

Cattle were shipped from Belgrade, Mont., to the Union Stock Yards at Chicago over two connecting railroads—the Northern Pacific and the Burlington—under a through bill of lading issued by the initial carrier. The bill contained a stipulation requiring notice of claims for injuries in transit "to some officer or station agent of the said company" before removal or mingling of the stock, and another that the terms of the bill of lading should inure to the benefit of any connecting carrier. On reaching their destination the

cattle were delivered by the Burlington to an agent of the shipper and sold, removed and mingled with other stock before any notice was given of a claim for injury in transit. In an action against the Northern Pacific as initial carrier for injuries for delay while passing over both roads, the Montana Supreme Court, 50 Mont., 122, interpreted the stipulation as requiring that the notice be given to an officer or station agent primarily employed by the Northern Pacific, and thereby excluding notice to an officer or station agent of the Burlington; and then held the stipulation unreasonable and inoperative because no officer or station agent primarily employed by the Northern Pacific was accessible at the place of destination. That judgment has now been reversed by the Supreme Court of the United States for the following reasons: The shipment was an interstate one, and therefore governed by the Interstate Commerce Act and its amendments. It was to pass over both roads, the delivery was to be made, and was made, by an officer or agent of the connecting carrier, and the notice was to be given before removal or mingling; that is, while it was yet possible from inspection to ascertain whether any claim of injury was well founded. "In these circumstances," the court said, "it seems plain that the stipulation meant and contemplated that the notice might be given at the place of destination to an officer or station agent of the connecting carrier, and that notice to it, in view of its relation to the initial carrier, should operate as notice to the latter. This interpretation treats the stipulation as designed to be fair to both shipper and carrier, permits it to serve a useful purpose, and gives due effect to the statute under which it was issued. True, the words 'said company' in the stipulation, if read only in connection with an introductory sentence in the bill of lading, would seem to refer to the initial carrier alone, but when they are read in connection with the statute and other parts of the bill of lading, including the provision that its terms and conditions 'shall inure to the benefit of' any connecting carrier, it is apparent that they embrace the carrier making the delivery as well as the initial carrier, especially as the former is in legal contemplation the agent of the latter." Because the stipulation in the bill of lading was not inoperative and the required notice had not been given, judgment for the plaintiff was reversed.—Northern Pacific v. Wall. Decided April 24, 1916.

## COURT NEWS

### Crossing Accident—Contributory Negligence of Automobile Driver

The driver of an automobile approaching railroad tracks must exercise, the Michigan Supreme Court holds, the same degree of care as a pedestrian, and where there was a point between 10 and 15 feet from a railroad track where a driver could have seen an oncoming train for over 1,000 feet, but he did not operate his car in such manner as to enable him when he reached that point to stop his car and look for approaching trains before reaching the track, he was guilty of such contributory negligence as prevented a recovery of damages from the railroad.—Sanford v. Grand Trunk Western (Mich.), 157 N. W., 38.

### Injuries to Persons on Tracks

In an action for the death of a person killed by a switch engine, running backwards, while he was walking on the track in a snowstorm, the Michigan Supreme Court holds that a sane man, with no infirmities, who unnecessarily selects the used track of a railroad as a pathway, and continues to remain on or walk along it until struck by a passing train or engine, is, as a general proposition, guilty of contributory negligence. Although those operating a train should maintain a lookout for trespassers with that degree of care which a person of ordinary prudence and caution would exercise under the circumstances, having in mind the safety of the train, its passengers, and persons likely to be on the track, liability does not follow from neglect, that court holds, unless the misconduct of those operating the engine was willful, wanton and gross; and failure by those running trains to stop simply because they see ahead of them, upon or approaching the tracks, persons who are apparently without disability and of sufficient age to understand the hazards of a railroad track, always to be recognized as a perpetual menace of danger, does not constitute negligence as a matter of law. Evidence of the railroad's gross negligence was held insufficient to warrant submission to the jury.—Wexel v. Grand Rapids & Indiana (Mich.), 157 N. W., 15.

### Diminution of Damages Under Federal Employers' Liability Act

In an action for damages for death of an engineman under the federal employers' liability act, the jury rendered a verdict for the plaintiff, assessing the damages at $9,000, after deducting $100 because the deceased's negligence contributed to his injury "to a limited extent." On appeal, the Kansas Supreme Court held this verdict excessive, because, if the deceased was guilty of contributory negligence, his negligence must have been more than a one ninety-first part of all the negligence that caused his injury. That amount would have been so small as to render it not worthy of notice. Either the deceased was not negligent; or, if he was, his negligence contributed substantially to his injury. It was held that, if the plaintiff would consent, a judgment would be entered in her favor for $6,000; otherwise a new trial would be granted. Marshall, J., dissented on the ground that the determination of the amount by which damages should be diminished on account of the negligence of an injured employee under the federal employers' liability act is by that act placed within the province of the jury, and cannot be exercised by the court; and, therefore, either the judgment should have been reversed and a new trial ordered, or it should have been affirmed.—Saar v. Atchison, T. & S. F. (Kan.), 155 Pac., 954.

### Crossing Accident—Contributory Negligence of Bicyclist

A bicyclist attempted to ride across a track at a crossing in front of a slowly approaching locomotive in full view for 40 or 50 feet. The engineer, as soon as he saw the bicyclist was going to try to cross, shouted a warning and threw on his emergency brakes. The rails being wet, the engine skidded 60 or 80 feet and killed the bicyclist. The Maryland Court of Appeals holds the railroad was not liable for his death, he having been guilty of contributory negligence in trying to cross, while the engineer, seeing his approach, had the right to assume that he would stop at a place of safety and not attempt to cross, and he had used all means possible to stop the train after he saw the man was trying to cross.—State v. N. Y. P. & N. (Md.), 96 Atl., 812.

### Crossing Accident—Contributory Negligence of Driver of Vehicle and Passenger

The Virginia Supreme Court of Appeals holds that the mere act of raising gates at a railroad crossing in a city is insufficient to justify a driver in crossing the tracks without stopping, looking or listening. In an action for the death of a passenger in a wagon, killed at a crossing, it was held that the plaintiff, who was driving, and the deceased, his brother, riding with him, were equally negligent in going on a track in front of a train traveling at about 4 miles an hour, although the gates were open and no warning was given, where they could have seen, had they stopped, looked or listened. The negligence of the driver of a vehicle cannot be imputed to the passenger, but the passenger must use ordinary care for his own safety.—Southern v. Jones' Admr. (Va.), 88 S. E., 178.

### Crossing Accident—Contributory Negligence of Driver

A right of way was entirely unfenced and without cattle guards or wing fences approaching the guards. A person, driving in a sleigh on a dark night, with a heavy fall of snow on the ground, approached a track which cut diagonally across the highway. He knew the railroad was unfenced, but let his horses have pretty much their own way, thinking, as he said, it was safer in the dark to trust to their intelligence than to attempt to guide them. The road ran very close to the side of the track. The horses turned along the track, and had gone about a mile when they were struck by a train and killed; and the driver was injured. It was held by the Michigan Supreme Court that the company was not liable for injury to the plaintiff as he was not justified in leaving the matter of keeping on the road entirely to his horses. (By consent of the railroad's counsel he was allowed damages for the loss of his horses.)—Dugas v. Munising, Marquette & Southeastern (Mich.), 155 N. W., 579.

# Railway Officers

### Executive, Financial, Legal and Accounting

E. L. Mitten has been appointed auditor of the Evansville & Indianapolis at Terre Haute, Ind., vice E. P. Clawson, resigned.

C. C. Hine, whose appointment as general attorney of the Chicago, Indianapolis & Louisville has been announced, was born at La Fayette, Ind., on March 4, 1884. He graduated from the Illinois College of Law in June, 1907. He first entered railway service on September 1, 1902, in the law department of the Monon. From June 1, 1908, until July 15, 1912, he was employed in the law department of the Grand Trunk Western at Chicago, at the same time engaging in the general practice of law in that city. He was stationed at La Fayette, Ind., as general claim agent of the Monon from July, 1912, to September 7, 1914, when he was promoted to assistant general attorney with office at Chicago. His promotion to general attorney was effective on May 1. His headquarters, as heretofore, will be at Chicago.

Joseph S. Ford, auditor for the receivers of the Chicago & Eastern Illinois, with office at Chicago, retired on May 1, after 48 years of continuous railroad service, as has been announced in these columns. He retains the office of treasurer of the Southern Illinois & Missouri Bridge Company. Mr. Ford was born at Damariscotta, Maine, and entered railway service in January, 1868, as treasurer of the Missouri Valley, with office at St. Joseph, Mo. On April 1, 1868, he was appointed assistant treasurer of the consolidated company, the Kansas City, St. Joseph & Council Bluffs, which position he held until November, 1878. He was then appointed auditor in charge of both the accounting and financial departments of the following roads, with office at Kansas City, Mo., and held that office until they were separated by change of ownership: To July, 1880, Atchison & Nebraska; to December, 1880, Kansas City, Lawrence & Southern; to January 1, 1882, Kansas City, St. Joseph & Council Bluffs; to April 23, 1888, Kansas City, Ft. Scott & Gulf and Kansas City, Springfield & Memphis. From April 23, 1888, to July 1, 1901, he was controller of the Kansas City, Ft. Scott & Memphis, and from February 10, 1885, to July 1, 1901, also controller of the Kansas City, Clinton & Springfield. From January 15, 1887, to July 1, 1901, he was also controller of the Current River, and from January 26, 1887, to July 1, 1901, also controller of the Kansas City, Memphis & Birmingham. From October 1, 1901, to January 1, 1903, he was assistant secretary and assistant treasurer of the St. Louis & San Francisco at New York, and from January 1, 1903, to May 27, 1913, he was secretary and auditor of the Chicago & Eastern Illinois, with office at Chicago. Since that date his title has been auditor for the receiver. Since June 19, 1903, he has also been secretary and treasurer of the Southern Illinois & Missouri Bridge Company. It has fallen to Mr. Ford's lot to disburse the money paid for the construction of the two largest bridges across the Mississippi river south of St. Louis, the Memphis bridge built by the Kansas City, Ft. Scott & Memphis, which cost $3,200,000, and the bridge at Thebes, Ill., which cost approximately the same amount.

J. S. Ford

### Operating

Lewis W. Martin has been appointed trainmaster of the Northern Pacific, with headquarters at Dickinson, N. D.

R. G. Stull has been appointed terminal trainmaster of the Baltimore & Ohio at Chicago Junction, Ohio, vice C. W. Van Horn, promoted.

R. A. Pierce, general superintendent of the Ogden Union Railway & Depot Company, at Ogden, Utah, has been appointed superintendent of the Utah-Montana division of the Oregon Short Line with office at Pocatello, Idaho, succeeding A. F. Brewer, deceased.

Elisha Lee, whose appointment as assistant general manager of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., has been announced, was born on September 24, 1870, at Chicago, and graduated from the Massachusetts Institute of Technology in the class of 1892. He entered the service of the Pennsylvania Railroad in November of the same year as a rodman in the office of the division engineer on the Tyrone division. From August, 1895, to October, 1897, he was on leave of absence. In April, 1899, he was appointed assistant supervisor, and two years later was promoted to supervisor. In August, 1903, he was appointed assisted engineer in the maintenance of way department, and in April, 1907, was promoted to principal assistant engineer on the Philadelphia, Baltimore & Washington. On March 24, 1909, he was appointed superintendent of the New York, Philadelphia & Norfolk, and two years later was promoted to assistant to the general manager of the Pennsylvania Railroad, lines east of Pittsburgh, Pa., and Erie. In April, 1914, he was appointed general superintendent of the Philadelphia, Baltimore & Washington, with office at Wilmington, Del., and now becomes assistant general manager of the Pennsylvania Railroad, as above noted.

Elisha Lee

Charles S. Krick, who has been appointed general superintendent of the New Jersey division of the Pennsylvania Railroad, with headquarters at New York, as has been announced in these columns, was born on March 16, 1866, at Reading, Pa. He was educated in the public schools, also at the Carroll Institute, Reading, and in June, 1887, graduated from Lafayette College. The following month he entered the service of the Pennsylvania Railroad as rodman on the Schuylkill division, and later was transferred to Altoona. On December 14, 1890, he was appointed assistant supervisor of the Tyrone division, and in April, 1892, was transferred in the same capacity to the Philadelphia division, becoming acting supervisor about three years later of the Schuylkill division. He was promoted to supervisor in June, 1896, and was subsequently supervisor on the Middle division, and later on the Pittsburgh division. On January 1, 1903, he was made assistant engineer of the Eastern and Susquehanna divisions, and later was transferred to the Philadelphia Terminal divison, becoming principal assistant engineer of the Philadel-

C. S. Krick

phia, Baltimore & Washington in January, 1906. In April of the following year he was made superintendent of the New York Terminal division, and on January 1, 1912, when the Hudson and New York Terminal divisions were combined to form the Manhattan division, he was appointed superintendent of that division at New York. In February, 1914, he was appointed superintendent of the Philadelphia Terminal division, with headquarters at West Philadelphia, Pa.; since November, 1915, he was acting general superintendent of the New Jersey division, and now becomes general superintendent of the same division, with headquarters at New York, as above noted.

John B. Fisher, whose appointment as superintendent of freight transportation of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., has already been announced in these columns, was born on September 27, 1866, at Conemaugh, Pa., and began railway work on June 1, 1883, with the Pennsylvania Railroad, serving consecutively to 1902 as clerk in the office of the general superintendent, clerk to superintendent of the Middle division, and later chief clerk to freight trainmaster. He was then to June, 1903, assistant freight trainmaster, and from June 1, 1903, to April, 1907, was freight trainmaster on the same division. On April 1, 1907, he was appointed superintendent of telegraph, and in January, 1910, was appointed superintendent of the New York division, which position he held at the time of his recent appointment as superintendent of freight transportation, with headquarters at Philadelphia, Pa., of the same road, as above noted.

J. B. Fisher

H. C. Bixler, who has been appointed superintendent of stations and transfers of the Pennsylvania Railroad for the lines east of Pittsburgh, with office at Philadelphia, Pa., was born on March 21, 1868, at Broadford, Pa., and began railway work on May 17, 1887, as a telegraph operator on the Pittsburgh division of the Pennsylvania Railroad. From December, 1891, to June, 1903, he served as train despatcher; then to March, 1906, was assistant trainmaster. He was appointed assistant trainmaster of the Pittsburgh Terminal in March, 1906, and in November, 1909, became trainmaster of the New York Terminal division. He remained in that position until November, 1911, when he was appointed assistant superintendent of the Philadelphia Terminal division, and later became acting superintendent of the same division, which position he held at the time of his recent appointment as superintendent of stations and transfers of the same road, as above noted.

H. C. Bixler

C. A. Cotterell, recently appointed superintendent of district 2, Alberta division, Canadian Pacific, entered railway service 22 years ago as a telegraph operator on the same road. He remained on the lines east of Montreal as agent and operator at various places for four and one-half years, and went west to the Crow's Nest Pass railway at MacLeod, Alta., in the summer of 1898. Subsequently he held the positions of despatcher and chief despatcher at various important points on the Canadian Pacific's western lines. In May, 1908, he became chief despatcher of the British Columbia division at Revelstoke, later being promoted to trainmaster and acting superintendent of the district between Kamloops, B. C., and Field. In May, 1912, he was appointed acting superintendent at Nelson, B. C., and later acting superintendent at Vancouver. In September of the same year he was appointed terminal trainmaster at Vancouver, and in May, 1913, was appointed superintendent at Vancouver.

T. S. Bell, chief clerk in the car record office of the Pennsylvania Railroad, at Philadelphia, Pa., has been appointed superintendent of car service, with office at Philadelphia. Mr. Bell has been in the service of the Pennsylvania Railroad since 1876. He was born April 23, 1856, on his father's farm in Huntington county, Pa. He was educated in the public schools and graduated from the Bellwood Academy of Blair county, Pa. For a time he was in business with his father in Altoona, to which place the family had moved, but on March 16, 1876, he became a clerk in the car record department at Altoona. June 1, 1881, he was transferred to Philadelphia as a clerk in the office of the superintendent of transportation, later being again transferred to the office of the general superintendent of transportation in the same city. In 1890 he became assistant chief clerk of the car record office, and since 1897 has been chief clerk in that office.

T. S. Bell

John M. James, whose appointment as superintendent of the Renovo division of the Pennsylvania Railroad, with headquarters at Renovo, Pa., has already been announced in these columns, was born on September 10, 1875, at Wellsville, Ohio. He was educated in the public schools of his native town and at Ohio State University. He began railway work in May, 1893, as a special apprentice in the Altoona shops of the Pennsylvania Railroad. From June, 1897, to May, 1899, he was engaged in special work in the motive power department; then until January, 1900, was assistant foreman car inspector at Washington, D. C. From January 4 to May 1, 1900, he was foreman of car shops; then to the following October was general foreman at the same place. From October 20, 1900, to January, 1902, he was general inspector of the Buffalo & Allegheny Valley division at Buffalo, N. Y., and in January, 1902, became assistant engineer of motive power of the same division. The following December he was appointed master mechanic at Olean, N. Y., remaining in that position until November, 1908, when he was appointed master mechanic of the Buffalo division. In May, 1911, he was transferred as master

J. M. James

mechanic to the West Philadelphia, Pa., shops, and the following January he was appointed superintendent of motive power of the Western Pennsylvania division at Pittsburgh, Pa. On December 1, 1913, he was appointed assistant superintendent of the Pittsburgh division at Pittsburgh, which position he held at the time of his recent appointment as superintendent of the Renovo division of the same road. His entire service has been with the Pennsylvania Railroad.

Theodore Speiden, Jr., whose appointment as assistant general manager of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has already been announced in these columns, was born on March 25, 1881, at Louisville, Ky., and was educated in the high school of his native town. He began railway work in May, 1899, in the engineering department of the Louisville & Nashville. He subsequently became roadmaster of the Nashville division, with headquarters at Nashville, Tenn., of the same road, and while in that position had charge of the construction work done by the company's forces on the Lewisburg & Northern. In 1914 he entered the service of the Nashville, Chattanooga & St. Louis, as assistant superintendent of the Chattanooga division, and later was promoted to superintendent of the same division. On February 1, 1916, he was made superintendent of both the Chattanooga and the Nashville divisions, with headquarters at Nashville, which position he held at the time of his recent appointment as assistant general manager of the same road, as above noted.

T. Speiden, Jr.

W. G. Templeton, whose appointment as superintendent of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has already been announced in these columns, was born on April 2, 1872, at Beechgrove, Tenn., and was educated in Beechgrove College. He began railway work in 1892 as a telegraph operator on the Nashville, Chattanooga & St. Louis. Five years later he became station agent, remaining in that position for about three years. He then served for nine years as despatcher, then as clerk in the superintendent's office at Nashville for two years, and later as trainmaster of the Nashville & Chattanooga divisions for one year. He subsequently served as superintendent of the Huntsville division for two years; then as assistant superintendent of the Nashville & Chattanooga divisions for two months, which position he held at the time of his recent appointment as superintendent of the Nashville division of the same road, as above noted.

W. G. Templeton

H. L. Bell, assistant superintendent of the Southern Pacific Company at Ogden, Utah, has been appointed superintendent of freight terminals of the Southern Pacific Company, the Union Pacific and the Oregon Short Line with headquarters at Ogden, Utah. Mr. Bell has been appointed also superintendent of the Ogden Union Railway & Depot Company, succeeding R. A. Pierce, resigned to go to the Oregon Short Line.

### Traffic

E. L. Taylor has been appointed commercial agent of the Union Pacific System, at Santa Barbara, Cal., effective on May 1.

W. C. Bewley, commercial agent of the Georgia Railroad at Jacksonville, Fla., has been appointed commercial agent, with office at Memphis, Tenn.

F. G. J. Comeau, city freight agent of the Canadian Pacific at Halifax, N. S., has been appointed district freight agent Atlantic division, with office at Halifax.

H. J. Fitzgerald has been appointed division freight and passenger agent of the Houston & Texas Central, with office at Fort Worth, Tex, vice R. E. Lay, resigned.

Frederick C. Lang, freight solicitor of the Star Union Line, at Chicago, Ill., has been appointed agent of the line at Kansas City, Mo., vice L. G. Griffin, deceased.

J. Gowin has been appointed general agent of the Gulf Coast Lines with office at Kansas City, Mo., vice S. B. Franklin resigned, effective May 1.

J. G. R. Williams, export and import agent of the Texas & Pacific at New Orleans, La., has been appointed foreign freight agent, with office at New Orleans, effective May 1.

Charles T. Mandel has been appointed general passenger agent of the Carolina, Clinchfield & Ohio, effective May 1. The office of assistant general passenger agent has been abolished.

David E. Burley, general passenger agent of the Oregon Short Line at Salt Lake City, Utah, retired on May 1. Daniel S. Spencer, assistant general passenger agent at Salt Lake, has been appointed general passenger agent, and J. B. Durham has been appointed assistant general passenger agent, with office at Salt Lake, effective May 1.

A. D. Aiken has been appointed general agent of the Chicago, Rock Island & Pacific, with office at St. Louis, Mo., vice E. J. O'Neill, deceased. J. I. Johnson has been appointed commercial agent at St. Joseph, Mo., vice Mr. Aiken, and A. Peterson has been appointed general agent of the Chicago, Rock Island & Gulf, with office at Amarillo, Tex., vice Mr. Johnson, effective May 1.

R. H. Bell, general agent of the Canadian Northern at Chicago, Ill., has been appointed district freight agent, with office at Edmonton, Alta. R. F. Clark, general agent at Pittsburgh, Pa., has been transferred to Chicago, vice Mr. Bell; F. G. Wood, commercial agent at St. Louis, Mo., has been appointed general agent at Pittsburgh, succeeding Mr. Clark. L. E. Ayer has been appointed commercial agent, with office at St. Louis, vice Mr. Wood.

### Engineering and Rolling Stock

William Stance Kaminski has been appointed roadmaster of the Northern Pacific, with headquarters at Duluth, Minn.

A. W. Martin has been appointed superintendent of shops of the Cleveland, Cincinnati, Chicago & St. Louis, at Beech Grove, Ind., vice R. J. Williams, resigned, effective May 1.

R. K. Brown, division engineer of the Salt Lake division of the San Pedro, Los Angeles & Salt Lake, has been appointed maintenance of way engineer of the entire road, with office at Los Angeles, Cal., effective May 1.

E. F. Mitchell has been appointed group engineer of the western group of the presidents' conference committee on federal valuation of railroads, with office at Chicago, Ill., effective May 1. Mr. Mitchell was born in July, 1864, and was educated in private schools. He entered railway service in 1882 as an employee of the construction department of the Pennsylvania. He remained with this road in various capacities in both the construction and maintenance departments until 1887. From 1887 to 1890 he was division engineer maintenance of way of the Norfolk & Western, and from 1890 to 1892 assistant engineer in charge of surveys and track construction and draftsman for Denver & Rio Grande. He was engaged in private civil and mining engineering practice in Colorado until 1900, when he returned to the Denver & Rio Grande as assistant engineer. From 1901 to 1904 he was chief engineer of the San Luis Valley Land & Mining Company in Colorado, and from 1905 to 1912 was engineer of construction and chief engineer of the Missouri

Pacific. For the past four years he has been engaged in private practice as consulting engineer.

H. H. Maxfield, whose appointment to the position of superintendent of motive power of the Western Pennsylvania division of the Pennsylvania Railroad was announced in last week's issue, has been in the service of the Pennsylvania Railroad since 1895, and a master mechanic on the Pittsburgh division since 1905. He was born in 1873 and was educated at Stevens' Institute. He entered the service of the Pennsylvania Railroad September 5, 1895. He became a machinist August 1, 1899, and March 1, 1900, became inspector or gang leader. On April 1, 1901 he was appointed assistant road foreman of engines, becoming successively on December 1, 1902, assistant master mechanic, and on April 15, 1903, assistant engineer of motive power. On April 1, 1905, he became master mechanic of the Pittsburgh division, and it is this position he now leaves to take up his new duties as superintendent of motive power of the Western Pennsylvania division, with office at Pittsburgh.

H. H. Maxfield

**Special**

J. W. Lee, Jr., publicity agent of the Pennsylvania Railroad at Philadelphia, Pa., has resigned, effective May 15. He will become associated in business at New York with Ivy L. Lee, who was formerly executive assistant of the Pennsylvania Railroad. George B. Harley, an assistant in the office of the publicity agent, succeeds Mr. Lee, and Walton M. Wentz, information clerk in the publicity department, has been appointed assistant publicity agent, with office at Philadelphia.

## OBITUARY

W. H. Miller, paymaster of the Wabash, died on April 30, of appendicitis at St. Louis, Mo.

Michael F. Molloy, controller of the Cincinnati, New Orleans & Texas Pacific, also of the Alabama Great Southern, and auditor of the Harriman & Northeastern, with headquarters at Cincinnati, Ohio, died in that city on April 22, at the age of 57. Mr. Molloy began railway work in April, 1880, as junior ticket clerk on the Cincinnati, New Orleans & Texas Pacific, and later served consecutively as freight settlement clerk; chief clerk in the freight department, traveling auditor, chief bookkeeper and chief clerk, assistant auditor and acting auditor. In January, 1900, he became auditor, and since December, 1906, was controller of the same road, and of the Alabama Great Southern.

George H. Smith, general passenger agent of the New Orleans & Northeastern, the Alabama & Vicksburg, and the Vicksburg, Shreveport & Pacific, died at his home in New Orleans, La., on April 27. Mr. Smith was born at Boston, Mass., on October 7, 1853. He entered railway service in 1873 as a clerk in the general office of the Chicago, Burlington & Quincy. From 1878 to 1879 he was chief clerk in the passenger department of the Western Union Railroad at Racine, Wis. He held a clerical position in the passenger department of the Chicago, Milwaukee & St. Paul at Milwaukee, Wis., in 1879-80. He was successively rate clerk, chief clerk and assistant general ticket and passenger agent of the Chicago, Rock Island & Pacific, at Chicago, Ill., until 1890. After spending three years in the real estate business in Chicago he entered the service of the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, as chief clerk in the passenger department. He was later promoted to assistant general passenger agent, but in 1897 went to New Orleans as general passenger agent of the Queen & Crescent, the position he retained up to the time of his death.

# Equipment and Supplies

## LOCOMOTIVES

THE MINNESOTA, DAKOTA & WESTERN is in the market for one locomotive.

THE CHESAPEAKE & OHIO has issued inquiries for 25 to 50 Mallet type locomotives.

THE LOUISIANA & ARKANSAS has ordered 2 ten-wheel locomotives from the Baldwin Locomotive Works.

THE LAKE TERMINAL RAILROAD has ordered 4 switching locomotives from the Baldwin Locomotive Works.

THE CHICAGO SHORT LINE has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE CALUMET, HAMMOND & SOUTHEASTERN has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE MINDIN COAL COMPANY, Mindin Mines, Mo., has ordered one four-wheel switching locomotive from the Baldwin Locomotive Works.

THE AMERICAN STEEL & WIRE COMPANY, Cleveland, Ohio, has ordered one four-wheel switching locomotive from the Baldwin Locomotive Works.

THE KANSAS CITY SOUTHERN. The unconfirmed item in the *Railway Age Gazette* of April 21 to the effect that this road had placed an order for 10 locomotives, has been denied.

THE MAINE CENTRAL, reported in the *Railway Age Gazette* of April 14 as being in the market for a number of switching locomotives, is also contemplating the purchase of Mikado type locomotives.

THE CUBA COMPANY has ordered 3 six-wheel switching locomotives from the American Locomotive Company. These locomotives will have 18 by 24-in. cylinders, 50-in. driving wheels, and a total weight in working order of 112,000 lb.

THE SHANTUNG RAILWAY (China) has ordered 3 Consolidation locomotives from the American Locomotive Company. These locomotives will have 20½ by 26-in. cylinders, 50-in. driving wheels, and a total weight in working order of 158,000 lb.

THE ASHLAND COAL & IRON RAILWAY has ordered one eight-wheel switching locomotive from the American Locomotive Company. This locomotive will have 22 by 28-in. cylinders, 56-in. driving wheels, and a total weight in working order of 202,000 lb.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for a second-hand, saddle tank, 36 in. gage locomotive, with four drivers and no pony trucks, and capable of taking short curves. The locomotive must stand inspection under Ohio state boiler laws. The weight should be something like 70,000 lb., but a lighter one in good working order would be considered for quick delivery.

THE SEABOARD AIR LINE, reported in last week's issue as having issued inquiries for 10 Mountain type locomotives and as contemplating the purchase of 15 Mallet type engines, has since issued additional inquiries for 10 Mikado and 10 Mallet type locomotives, or for a total of 30 locomotives. It is understood, however, that only 20 locomotives will be ordered, including the 10 Mountain type locomotives and 10 freight locomotives.

## FREIGHT CARS

THE NORFOLK SOUTHERN is in the market for 250 freight cars.

THE SEABOARD AIR LINE has issued inquiries for 50 caboose cars.

THE BUFFALO, ROCHESTER & PITTSBURGH is in the market for 20 eight-wheel cabooses.

THE ILLINOIS OIL COMPANY, Rock Island, Ill., has issued inquiries for 10 caboose car underframes.

CORRIGAN, MCKENNEY & Co., Cleveland, Ohio, have ordered 6 hopper cars from the Pressed Steel Car Company.

THE CHICAGO & NORTH WESTERN has ordered 1,000 34-ft. wooden box cars from the American Car & Foundry Company.

THE ANACONDA COPPER MINING COMPANY, Anaconda, Mont., has ordered 200 hopper cars from the Western Steel Car & Foundry Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 600 steel channels and center sills, 286 tons, from the Western Steel Car & Foundry Company.

THE LOUISVILLE & NASHVILLE has ordered to be constructed in its own shops, 1,000 40-ton box cars, 500 50-ton gondola cars and 100 50-ton furniture cars. This company has also ordered 100 underframes for low-side gondola cars and 100 underframes for furniture cars from the American Car & Foundry Company, 100 underframes for stock cars from the Mount Vernon Car Manufacturing Company, and 300 underframes for automobile cars and 150 for refrigerator cars from the Bettendorf Company. These orders for underframes are in addition to an order for 850 given the Pressed Steel Car Company and reported in the issue of April 21.

## PASSENGER CARS

THE ALEXANDRIA & WESTERN has issued inquiries for one combination coach and smoking car, and one combination passenger and baggage car.

THE SOUTHERN RAILWAY is inquiring for 2 dining and one cafe observation car. These cars are in addition to the 92 cars orders for which were recently placed.

THE MAINE CENTRAL, reported in the *Railway Age Gazette* of March 17 as being in the market for one postal car, is also in the market for 5 or 6 additional passenger train cars.

## IRON AND STEEL

THE PERE MARQUETTE has ordered 15,000 tons of rails from the Algoma Steel Corporation.

THE NORFOLK & WESTERN has ordered 18,000 tons of rails from the United States Steel Corporation.

THE HAVANA CENTRAL has ordered 5,000 tons of rails from the United States Steel Corporation.

THE GEORGIA LUMBER COMPANY, Byronville, Ga., is in the market for 15 miles of 52-lb. relaying rails.

THE CINCINNATI, HAMILTON & DAYTON has ordered 5,000 tons of rails from the United States Steel Corporation.

THE ERIE has ordered 25,000 tons of rails from the United States Steel Corporation in addition to orders previously reported.

THE MINNEAPOLIS, ST. PAUL & SAULT STE MARIE has ordered 14,000 tons of rails for 1917 delivery from the Illinois Steel Company.

THE BALTIMORE & OHIO has ordered 600 tons of steel for coal pockets near Baltimore from the Hedden Iron Construction Company.

THE CHICAGO GREAT WESTERN has ordered 4,000 tons of open hearth rails and 4,450 tons of Bessemer rails from the Illinois Steel Company.

THE CHICAGO & EASTERN ILLINOIS has arranged with the Illinois Steel Company for the delivery of 10,000 tons of 90-lb. rails in the spring of 1917.

THE DULUTH & IRON RANGE has ordered 601 tons of steel from the American Bridge Company for an ore car repair shop at Two Harbors, Minn.

THE TEXAS & PACIFIC has ordered 14,000 tons of open hearth rails for 1917 delivery, from the Tennessee Coal, Iron & Railroad Company.

THE LAKE SUPERIOR & ISHPEMING has ordered 3,500 tons of rails from the Illinois Steel Company. It has also placed orders with the Lackawanna Steel Company for May, 1917, delivery for 3,500 tons of 85-lb. rails, 9,800 pairs of angle bars, 9,800 Abbott joint plates, 1,300 kegs of spikes and 350 kegs of bolts.

## TRACK SPECIALTIES

THE LAKE SUPERIOR & ISHPEMING.—See item under Iron and Steel.

## MACHINERY AND TOOLS

THE NEW YORK CENTRAL has issued inquiries for the following tools and cranes for its Coalburg, Ohio, shops: One planing machine; one 4-spindle combination horizontal car boring machine; one vertical hollow chisel car mortiser with two vertical boring attachments; one 42-in. band sawing machine; one 36-in. rip sawing machine; one 2-in. triple head bolt cutting machine; one 2-in. pipe threading machine; one 12-in. power punching machine; one 250-lb. power hammer; one 28-in. vertical drilling machine; one 3 x 18-in. emery grinding machine; two 10-ton standard electric traveling cranes.

THE LEHIGH VALLEY has announced plans for the placing in commission of eight small repair shops at important points on the system. Orders have been placed for a supply of planers, lathes, boring mills, shapers and other tools used in the making of light repairs to locomotives. These will cost about $100,000. When the new tools are delivered they will be sent to shops at Hazelton, Delano and Coxton, Pa., and to Auburn, Cortland, Manchester and Buffalo, N. Y. There will be two of the shops in Buffalo, one in the East Buffalo yards and the other at Tifft Farm where the lake terminals of the railroad are located.

## SIGNALING

THE MISSOURI, KANSAS & TEXAS has asked for prices on 339 signals and auxiliary apparatus, although it is understood that the decision to carry out this installation has not yet been finally made.

THE CHICAGO, MILWAUKEE & ST. PAUL has authorized the installation of a.c. color-indication, light signals on 249.9 miles of road in its electrified zone on the Puget Sound lines, in addition to 130.5 miles now under construction. The new signals will be installed between Harlowton, Mont., and Lennep, 35.7 miles; Three Forks, Mont., and Piedmont, 34.3 miles; Finlen, Mont., and Deer Lodge, 25.9 miles; and Deer Lodge, Mont., and St. Regis, 154 miles. The d.c. semaphore signals between St. Regis and Haugan, 19.2 miles, are to be replaced with light signals, and the d.c. equipment recently removed between Lennep and Butte, will be reinstalled between Plummer Juntcion and Manito, 19.2 miles, and between Marengo and Beverly, 97.2 miles. When these installations and those now under construction are completed, the electrified zone will be completely equipped with a. c. light signals from Harlowton to Avery, a distance of 440.5 miles, and the automatic block will be continuous from Harlowton to Seattle and Tacoma, 877 miles.

CHARCOAL IN SWEDEN.—The transport of charcoal in Sweden presents quite a small problem to the State Railways during the period from January to April, when it goes on. This year not less than about 25,000 carloads have to be dealt with, an increase of about 40 per cent compared with last year.

CHINESE RAILWAY CONCESSIONS TO RUSSIA.—According to the Peking correspondent of the Times (London), an important agreement between the Chinese government and the Russo-Asiatic bank has just been signed. It provides for the construction of a railway from Kharbin to Blagoveschensk, with a branch from Mergen to Tsitsihar, a total of 1,000 versts (666 miles). These lines will tap river basins of great fertility and promote agricultural development on a large scale. A large section of the projected railway follows the same line as the American Chinchow-Aigun scheme, the agreement relating to which was signed by China, but was opposed by Russia and Japan. The present agreement provides for a loan of $25,000,000 to be floated in the financial centres of Europe after the war. The conditions include the usual safeguards relating to construction, accounts, etc. This new agreement, the correspondent adds, may be regarded as an offset to the series of Japanese agreements of October, 1913, relative to railways to be built in Eastern Mongolia and Southern Manchuria.

# Supply Trade News

Herbert C. Keith, consulting engineer of New York, has moved to new offices in the Tribune building, 154 Nassau street.

The Hale & Kilburn Company, Philadelphia, Pa., has moved its New York offices from suite 1433, 30 Church street, to suite 1412 in the same building.

Stephen Kendall Poole, secretary of Poole Brothers, railway printers, Chicago, and the youngest son of George A. Poole, the founder of the company, died on April 19.

The Consolidated Railway Electric Lighting & Equipment Company has moved its main offices in New York from 11 Pine street to the Adams Express building, 61 Broadway.

J. L. Adams, sales representative of the Cambria Steel Company, at Cincinnati, Ohio, has been appointed manager of sales of the Cambria Steel Company, the Midvale Steel Company and Worth Brothers Company.

Joseph A. Horne, general superintendent of the Yale & Towne Manufacturing Company, New York, has been elected second vice-president. Mr. Horne, who is also a director, has the entire management of the works at Stamford, Conn., and of all manufacturing operations of the company.

Enos M. Barton, one of the founders of the Western Electric Company and for 20 years its president, died at his southern home in Biloxi, Miss., on May 3, 1916, at the age of 72 years. Since his retirement from the presidency of the company, in 1908, he had been chairman of its board of directors.

Fairbanks, Morse & Co. have closed contracts with the Pennsylvania Lines for a conveyor type coaling station of large capacity to be erected at Chicago, Ill., and with the Atchison, Topeka & Santa Fe for a reinforced concrete coaling station equipped with conveyor type machinery, to be erected at Gallup, N. M.

The Selby Safety Flag Company announces that it has received orders from the St. Louis & San Francisco for improved flagmen's outfits for all passenger crews on the first and second districts of the road. It has also secured its third order from the Kansas City, Clay County & St. Joseph, for the complete equipment of all its crews.

The United States Metallic Packing Company, Philadelphia, Pa., announces that in a suit brought by that company against the Hewitt Company, for infringement, the United States Circuit Court of Appeals in an opinion filed April 24, 1916, has decided that King patent No. 914,426, granted the United States Metallic Packing Company, is a good and valid patent and infringed by the rings made by the Hewitt Company.

On May 1, the Cleveland offices of the Niles Tool Works Company were removed from the Rockefeller building to the Perry Payne building at 730 Superior street. The new quarters provide a large show room and store which is stocked with Pratt & Whitney machinery, small tools and gages. This company represents the Niles-Bement-Pond Company for its entire line of machine tools, steam hammers, electric traveling cranes, etc.

Alonzo G. Kinyon, superintendent of locomotive operation of the Seaboard Air Line at Portsmouth, Va., has resigned to become chief consultant on the board of engineering research in power generation in steam locomotives for the Powdered Coal Engineering & Equipment Company, Chicago. Mr. Kinyon is vice-president of the Traveling Engineers' Association and a member of the executive committee of the International Railway Fuel Association.

The Standard Underground Cable Company, Pittsburgh, Pa., has moved its Chicago office from the Rookery to the Conway building, and the Detroit office has been moved from the Free Press Building, to the Whitney Building. A new office will shortly be opened in Minneapolis, Minn., in charge of W. J. Weld. The Portland, Ore., office has been discontinued, and a new office opened in the Newhouse Building, Salt Lake City, Utah, in charge of F. W. Wilson.

The Stover Engine Works and the Stover Manufacturing Company of Freeport, Ill., have been consolidated and will hereafter be known as the Stover Manufacturing & Engine Company. The new company has been incorporated under the laws of Illinois with an authorized paid capital stock of $3,000,000. The officers are as folows: W. A. Hance, president and treasurer; J. F. Smith, first vice-president and secretary; H. H. Antrim, second vice-president and assistant treasurer; Ralph Hubbart, assistant secretary. In addition to products not suited to the railway field, the company will manufacture gasoline, kerosene and fuel oil engines ranging in size from 1 to 60 horsepower.

The Copper-Clad Steel Company, Pittsburgh, Pa., has recently been incorporated under the laws of Pennyslvania, and has erected a plant at Rankin, Pa., for the manufacture of copper-clad steel products. After 10 years of laboratory and research work, Jacob M. Roth, president of the company, and J. W. Reisz, engineer, succeeded in perfecting a process for the welding of copper with steel or iron to produce a perfect weld without voids and with a commercially uniform conductivity throughout. This result is achieved by subjecting the steel to a special heat treatment in a patented mold which in addition to producing the weld improves the steel by increasing its tensile strength 30 per cent and its elastic limit 60 per cent. The union of the two metals is said to be so perfect that the copper covering cannot be broken from the steel core by twisting, stretching or hammering, and that temperatures less than the fusing point of the material do not change the weld.

Clifford J. Ellis, recently appointed manager of sales of the Midvale Steel Company at Chicago, has been in the employ of the Cambria Steel Company, formerly the Cambria Iron Company, for over 37 years, starting at the Johnstown (Pa.) office in 1879. In 1885, he was transferred to the Philadelphia office with the title of general agent. In that capacity he not only had charge of the sale of steel rails throughout the country but had direct supervision of the entire sales of the New York office. In September, 1886, he was transferred to Chicago, as manager of sales, in charge of the sale of all the company's products. As manager of sales of the Midvale Steel Company he will handle the business of that company and its recently acquired subsidiaries, Cambria Steel Company and Worth Brothers Company. His headquarters will be at 458 McCormick building.

C. J. Ellis

## TRADE PUBLICATIONS

POWER PUMPS.—Bulletin No. 302 recently issued by the National Transit Pump & Machine Company, Oil City, Pa., deals with the company's vertical triplex single acting power pumps.

WHEELBARROWS.—The Kilbourne & Jacobs Manufacturing Company has issued a 30-page catalog No. 41 describing its line of steel and wood wheelbarrows, concrete carts, drag and wheel scrapers, dump cars and plows. Special attention is directed to the abandonment of certain designs thus permitting greater standardization of the line.

PORTABLE CRANES.—The Canton Foundry & Machine Company, Canton, Ohio, has issued a booklet illustrating and describing the company's line of portable floor cranes and hoists. These cranes are so made that they can lift heavy loads and transfer them to or from lathes, planers or other machines, one man with a crane often being able to do work that would require four or more men without a crane. The cranes are in use in railroad shops for handling cylinder heads, steam chests, car wheels, large castings, etc.

# Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company is making a survey for a branch line from Lubbock, Tex., west for an indefinite distance. The construction of this line is not in immediate prospect.

BIG SANDY & CUMBERLAND.—Work on the extension from Matney, Va., to Grundy, 10 miles has been completed, and the extension has been opened for operation. (January 14, p. 85.)

CHICAGO GREAT WESTERN.—This company has completed a survey for a line between Rochester, Minn., and Mantorville. The cutoff, if constructed, will save the road about 25 miles in its running distance between Rochester and the twin cities.

CHICAGO, MILWAUKEE & ST. PAUL.—This company has awarded a contract for ballasting and bank widening between Alamo, S. D., and Aberdeen, to the Peter Nelson Company, Minneapolis, Minn. The St. Paul is laying track and ballasting the remainder of the line from Great Falls, Mont., to Agawam branch, with its own forces. The grading work was completed in 1914. (February 18, p. 337.)

CHICAGO, TERRE HAUTE & SOUTHEASTERN.—This company has awarded a contract to J. B. Dorris of Sullivan, Ind., for grading for a one-mile spur to the Edward Shirkey coal mine, near Shirkeyville, Ind. A 10-team outfit is now at work on the job.

DEKALB & WESTERN.—According to press reports, this company was organized to build from Rushton, Miss., northeast to Sledge, Ala., about 16 miles. The charter has been amended, it is said, permitting a change from Rushton to Dekalb for the western terminus, and increasing the capital to $160,000. R. E. Wilbourn, secretary, Meridian, Miss.

EAST BROAD TOP RAILROAD & COAL COMPANY.—Bids are wanted for building a 1.5 spur line and about 1 mile of sidings, also a 24-ft. steel bridge between Woodvale, Pa., and Alvan. The work will be mostly fills calling for the handling of between 10,000 and 12,000 cu. yd. The company has completed work on a 2.5-mile extension from the main line near Coles to the coal mines of Miller & Knepp, also on a half-mile spur from Woodvale to a new mine of the Rockhill Iron & Coal Company and on about half a mile of sidings.

FLORIDA ROADS ELECTRIC.—Surveys have been made and rights of way secured for the electric line to be built from Tampa, Fla., east via Gary, Mango, Seffner, Dover, Plant City, Youmans, and Winston to Lakeland, 33 miles. All the necessary franchises have been granted to E. J. Binford, of Tampa, except at Lakeland, and it is expected that this city will grant a franchise in about two weeks. A company is to be incorporated at once in Florida, and the franchises and rights of way will be turned over to the company when incorporated. Preliminary arrangements have been carried out so that the construction of the line can be started in the near future. (April 21, p. 926.)

FLORIDA ROADS.—According to press reports, the Export Phosphate Railway & Terminal Company expects to ask for a franchise soon for a line to be built from Mulberry, Fla., west to Tampa, about 30 miles. Henry Pierce and others of Tampa are said to be interested.

GEORGIA ROADS (ELECTRIC).—Plans are being considered for an electric railway, it is said, to be built from Blue Ridge, Ga., north to Copper Hill, Tenn., about 14 miles. H. P. Mulkey, Blue Ridge, is said to be interested.

GRAHAM COUNTY RAILROAD.—Work is now under way building from a junction with the Southern Railway at a point one mile east of Topton, N. C., north to Robbinsville in Graham county, 12 miles. The Wright-Johnstone Construction Company has the contract for the work, which will be very heavy on the first 1.25 miles. The work involves the handling of 140,000 cu. yd.; 50 per cent of this will be rock work. There will be some cuts 80 to 85 ft. deep, and some fills 90 to 100 ft. high. The maximum grade will be 4.3 per cent, and the maximum curvature 18 degrees, 30 minutes. The grades are to be compensated. The company plans to build later about 50 miles of logging road branches. Frank Buell, president; E. Philbrick, chief engineer, Andrews, N. C. (December 31, p. 1262.)

GULF COAST RAILWAY.—A contract has been given to E. B. Duncan, Ocala, Fla., to build from Venice, Fla., on the Seaboard Air Line southeast to Placida on the Charlotte Harbor & Northern, about 28.5 miles, and the work is now under way. The company was organized last year by some of the officers of the Southern Investment Company, Richmond, Va. L. M. Williams, president, Richmond. (December 17, p. 1177.)

JACKSON & EASTERN.—See Meridian & Memphis.

KENTUCKY ROADS (ELECTRIC).—As soon as financial arrangements have been completed, contracts will be let by the Shelbyville & Frankfort Realty Company to build an electric line from Frankfort, Ky., west via Bridgeport, Graefenberg, Peytona and Clayvillage, to Shelbyville, 19.5 miles. There will be three bridges and two power houses on the line which is to be built to carry general merchandise, coal, produce and dairy products. E. H. Taylor, Jr., president, Frankfort, Ky.; J. W. Gudgel, secretary, Shelbyville.

LINVILLE RIVER.—Track has been laid on about two miles of the extension building from Montezuma, N. C., northeast via Linville and Linville Gap to Shulls Mills, 14 miles. The cut and fill work involves handling about 6,000 cu. yd. to the mile. H. C. McCrary, Knoxville, Tenn., is the contractor. The maximum grade will be 4 per cent, and the maximum curvature 20 degrees. The company now operates a 14-mile line from Pineola, northwest via Montezuma to Cranberry. (November 12, p. 922.)

LOUISIANA ROADS (ELECTRIC).—Franchises have been granted, it is said, for an electric line to be built from Mandeville, La., northwest via Madisonville to Hammond about 30 miles. Residents of Mandeville are said to be back of the project.

MERIDIAN & MEMPHIS.—Grading work has been completed on the Jackson & Eastern, which started work early last year on an extension from Union, Miss., west to Sebastopol, about 13 miles. Track laying will be started in the near future. The company expects to develop a traffic in lumber, cotton, grain and merchandise. (July 23, p. 181.)

MIDLAND RAILWAY.—This company, which was chartered last year in Georgia to build from Savannah, Ga., northwest via Pineora, Statesboro, Swainsboro, Wrightsville and Sandersville to Milledgeville, about 150 miles, has work finished, it is said, on about 10 miles from Pineora toward Savannah. (May 7, p. 993.)

MILWAUKEE LAND COMPANY'S ROAD.—This company has begun the construction of a logging spur from the main line of the Seattle, Pt. Angeles & Western, 6½ miles into a tract of timber in Clallam county, Wash. The road will be standard gage and will be used for the exploitation of lumber resources in this region. The Milwaukee Land Company is a subsidiary of the Chicago, Milwaukee & St. Paul.

OKLAHOMA ROADS.—The city of Bartlesville, Okla., has arranged to raise $50,000 towards the construction of a railway from that city southwest through Pawuska to Fairfax, Osage county, 35 miles. A like amount is being raised at Pawuska. F. M. Overlees, chamber of commerce, Bartlesville, Okla.

PANAMA TRACTION.—The plans of this company call for building an electric line from Youngsville, Pa., north via Sugar Grove to Jamestown, N. Y., about 20 miles, thence west to Erie, Pa., an additional 45 miles. There will be four bridges on the line of between 50 ft. and 100 ft. each. M. M. Sanderson, president, 22 Maurice street, Buffalo, N. Y. Chapman & Graham, Jamestown, are the engineers.

## RAILWAY STRUCTURES

ANDERSON, S. C.—The Charleston & Western is planning to build a new brick freight station at Anderson. The work may be carried out by company forces.

CHICAGO, ILL.—The Pennsylvania Lines have awarded a contract to Fairbanks, Morse & Co. of this city for the erection of a conveyor type coaling station of large capacity.

COLORADO SPRINGS, COLO.—Plans are almost completed by the

Atchison, Topeka & Santa Fe for a passenger station to be built at Colorado Springs. The structure will be a two-story building 90 ft. by 301 ft., with brick exterior stone trimmings, and tile roof and tile interior. It will include depot baggage room, lunch room and dining room on the first floor, and railroad offices on the second floor. The entire first floor will have tile floor except the baggage room, which will have a mastic floor. The cost will be about $175,000.

FOND DU LAC, WIS.—The Chicago & North Western will receive bids until May 6 for the moving, remodeling and adding to the present passenger station here. The improvement, with track changes, will cost about $68,000.

GALLUP, N. M.—The Atchison, Topeka & Santa Fe has awarded a contract for a reinforced concrete coaling station equipped with conveyor type machinery to Fairbanks, Morse & Co., Chicago, Ill.

JERSEY CITY, N. J.—Bids have been received by the Erie Railroad for building a roundhouse at County Road on the Jersey meadows. The structure is to have from 35 to 40 stalls, and is to be of frame construction.

KENOSHA, WIS.—The order of the Railroad Commission of Wisconsin of April 19, 1916, providing for the elevation of the Chicago & North Western tracks in this city, includes the following details. The tracks of both the main line and the branch lines of the road will be elevated for a distance of 3.8 miles, 2.7 miles of which will be full elevation, and 1.1 miles run-off. It is proposed that four main tracks be provided in connection with this work instead of the present two tracks. There will be 15 subways on the Wisconsin division, and 1 on the Kenosha division, all of which will have steel superstructures and concrete abutments. In addition there will be two foot-subways. Five streets will be closed and one new street opened. The order also provides for the construction of a viaduct over the tracks at Main street. It is estimated that 600,000 cu. yd. of material will be handled in building embankments. Work must be started before July 1, 1917, and completed before December 31, 1919. The entire project will cost about $1,600,000.

KIMBALL, S. D.—The Chicago, Milwaukee & St. Paul will build a new passenger and freight station here at a cost of about $6,000. The work will be done by company forces. Plans are now under way in the drafting rooms of the railroad.

NEW CASTLE, PA.—The Erie Railroad has under consideration the question of building a new bridge across Neshannock creek, but this improvement has not yet been definitely decided upon. The work will consist of putting up two open hearth steel spans each about 75 ft. long, on concrete foundations to carry double track.

ORANGEBURG, S. C.—The Atlantic Coast Line has submitted a proposition to residents of Orangeburg to build a new passenger station in Orangeburg, it is said, at a cost of $11,000. The railroad also proposes to move the present passenger station to a suitable place for future use as a freight house.

POUGHKEEPSIE, N. Y.—The New York Central received bids on April 25 for a new passenger station and facilities to be constructed at Poughkeepsie. The cost of the improvements will be about $250,000.

RICHMOND, VA.—An officer of the Richmond, Fredericksburg & Potomac writes regarding the report that plans have been made for building the new passenger station at Richmond that the plans have not been decided upon. The question of building a station for the joint use of the Richmond, Fredericksburg & Potomac and the Atlantic Coast Line has been under consideration for several years.

ST. PAUL, MINN.—The Chicago, St. Paul, Minneapolis & Omaha has awarded a contract to the La Crosse Dredging Company, Minneapolis, for filling trestle approaches to its bridge over the Mississippi River here. The work involves the deposit of 60,000 cu. yd. of material.

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FRENCH COAL.—France's production of coal in 1913 was 41,000,000 tons; the following year the output receded to 30,000,000 tons, and as the territory occupied by the enemy yields about three-fourths of the country's aggregate production of coal, the figure for 1915 can hardly be put at more than 10,000,000 tons.

# Railway Financial News

CENTRAL VERMONT.—The Massachusetts legislature has been petitioned to permit the Central Vermont to acquire the Southern New England Railway.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—The Illinois Public Service Commission has approved of an issue of $4,530,000 Chicago, Indianapolis & Louisville bonds.

Arrangements have been made for the sale of $3,500,000 5 per cent first and extension mortgage bonds to Potter, Choate & Prentice, of New York.

LONG ISLAND.—Owing to a typographical error the line saying "The following was taken from Samuel Rea's testimony" was omitted in the news item in regard to the Long Island in last week's issue. Mr. Rea testified that he was a director of both the Pennsylvania and the Long Island, and that he voted and acted for the best interests of all stockholders, and not for any particular group of stockholders; and, further, that the tube connections of the Long Island with New York City would be just as profitable eventually to the Long Island as they are proportionately to the Pennsylvania Railroad.

MISSOURI, KANSAS & TEXAS.—The Texas railroad commission has authorized the San Antonio Belt & Terminal Railways to issue $1,750,000 notes to pay for building terminals in San Antonio, Tex., to be used by the Missouri, Kansas & Texas.

NORFOLK & WESTERN.—As announced in these columns last week, the annual dividend rate on the common stock was increased from 6 to 7 per cent. At the same time there was an extra dividend declared of 1 per cent.

PITTSBURG, SHAWMUT & NORTHERN.—The hearing on an application for an order requiring the sale of certain properties of this company, which is now in the hands of a receiver, has been postponed to October 1, at which time the priority of bonds and receiver's certificates will be passed upon. In the meantime the interest on the receiver's certificates is to be paid.

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WOMEN IN ENGLISH RAILWAY SHOPS.—The National Union of Railwaymen has arrived at a decision regarding the organizing of women employed in munition factories under railway control. The executive committee says that in future women in these factories will not be admitted to membership of the Railwaymen's Union. Where, however, they are partly employed on railway work and partly on munition production, the Union is open to receive them as members. The National Federation of Women Workers, it is said, is prepared to take the women munition workers into their organization. The negotiations between the railwaymen and the various skilled craft societies for a settlement of their differences are still proceeding, but it is expected that an amicable arrangement will shortly be reached.

OIL FUEL FOR SOUTH AMERICAN LOCOMOTIVES.—The scarcity and cost of coal in South America has arrived at a stage which seriously threatens the carrying on of the industrial activities of these countries, not to mention the discomforts arising therefrom to private persons. This sort of fuel, at something like $25 per ton, seems almost prohibitive. The use of oil is therefore becoming, apart from its greater efficiency, a matter of urgent necessity. To the railway companies, both in Argentina and Brazil, the policy of converting their locomotives for the combustion of oil is naturally strongly recommended by existing circumstances. The Central Railway of Brazil has resolved upon the complete abolition of coal and the substitution of oil, and has 60 of its locomotives converted already to its use. These are employed on the main line from Rio to Santos, as well as on the suburban lines of the capital. In Argentina, the Buenos Ayres Great Southern is converting the engines on the Buenos Ayres local section to the use of oil fuel. The Mexican Petroleum Products Company has supplied the whole of the oil used on the Central Railway of Brazil, and has superintended the conversion of the engines using it on this system. The same enterprise has just entered into a contract to supply the oil fuel for the Buenos Ayres Great Southern.